

Dr. Frank Fisher, Ph.D., Associate Professor

ADDRESS

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EDUCATION

NORTHWESTERN UNIVERSITY

Evanston, IL

Post-doctoral Research Associate, Department of Mechanical Engineering (September 2002 – July 2004)

- Post-doctoral Advisors: Dr. Rodney S. Ruoff, Dr. L. Catherine Brinson
- Member of the BIMat (Biologically Inspired Materials) Center research team at Northwestern

PhD in Mechanical Engineering (December 2002)

- Dissertation Title: *Nanomechanics and the Viscoelastic Behavior of Carbon Nanotube-Reinforced Polymers*
- Advisor: Dr. L. Catherine Brinson

MA in Learning Sciences (December 2000)

- MA Project: *Learners and Learning in Bioengineering*
- Advisor: Dr. Penelope Peterson

MS in Mechanical Engineering (December 1998)

- MS Thesis: *Viscoelastic Behavior of Polymer Matrix Composites with Interphase Effects: Theoretical Models and Finite Element Analysis*
- Advisor: Dr. L. Catherine Brinson

UNIVERSITY OF PITTSBURGH

Pittsburgh, PA

- BS in Mechanical Engineering (Summa Cum Laude), May 1995
- BS in Applied Mathematics (Magna Cum Laude), May 1995
- Phi Sigma Pi National Honor Society (Social Chair, Service Chair)
- Engineering Student Council (Academic Chair)

PROFESSIONAL EXPERIENCE

- Interim Department Director, Department of Mechanical Engineering, Stevens Institute of Technology, Hoboken, NJ, April 2013 - present
- Associate Professor, Department of Mechanical Engineering, Stevens Institute of Technology, Hoboken, NJ, September 2010 - present
- Assistant Professor, Department of Mechanical Engineering, Stevens Institute of Technology, Hoboken, NJ, Aug 2004 – Aug 2010
- Post-doctoral Research Associate, Biologically Inspired Materials Center, Northwestern University, Evanston, IL, 2002-2004
- Graduate Research Assistant, Department of Mechanical Engineering, Northwestern University, Evanston, IL, 1995-1999, 2000-2002

HONORS AND AWARDS

- 2014 Distinguished Faculty Mentor Award from the Stevens Student Government Association (SGA)
- 2011-16 Fulbright Specialist Roster, J. William Fulbright Foreign Scholarship Board
- 2009 NSF Faculty Early Career Development (CAREER) award
- 2009 Stevens Alumni Association Outstanding Teacher Award

- Appointed as an Affiliate Faculty Member of the Center for Innovation in Engineering and Science Education (CIESE) at Stevens, March 2012 – May 2013
- 2009 Ferdinand P. Beer and E. Russell Johnston Jr. Outstanding New Educator Award from the Mechanics Division of the American Society of Engineering Education (ASEE)
- Selected to participate in the National Academy of Engineering (NAE) first annual Frontiers of Engineering Education (FOEE) symposium (2009) - for faculty members in the first half of their careers who are engaged in interesting and effective innovations in engineering education
- Profiled as one of "Nation's Top Mechanical Engineers" by Investors Digest (April 6, 2011 issue)
- 2015 *AIMS Energy* article recognized as "the most downloaded article" by the journal (December 2015)
- 2014 *Journal of Vacuum Science and Technology B* paper recognized as one of the "most read" articles in the journal (October 2014)
- 2012 *Nanotechnology* paper selected by the journal editor for inclusion in the exclusive *Highlights 2012* collection (<5% of over 1000 articles selected)
- 2011 *Smart Materials and Structures* paper recognized as one of the top 20 most cited articles published in 2011 (June 2013)
- 2011 *Smart Materials and Structures* paper recognized as being in the top 10% of all IOP paper downloads in the first quarter of Spring 2011
- 2008 *Smart Materials and Structures* recognized as a 'a most-accessed article' by the Journal
- Selected as an Honorary Member of the Gear & Triangle Honor Society at Stevens, for contributions to the campus and to student activities
- Harvey N. Davis Distinguished Teaching Assistant Professor award (2006)
- Travel funding to participate in the National Institute of Standards and Technology (NIST) Workshop on Materials Characterization for Nanoscale Reliability, August 14-16, 2007, Boulder, CO.
- NSF Tuition Fellowship to attend the NSF Summer Institute Short Course on Multiscale Modeling and Simulation of Nano Mechanics and Materials, June 7-11, 2004.
- Searle Center for Teaching Excellence Teaching Assistant Fellow (2000-2001, 2001-2002)
- Preparing Future Faculty Program certificate, Northwestern University, June 2000
- Nugent Teaching Assistant (Merit) Fellowship (Dept. of Mechanical Engineering, Northwestern)
- Walter P. Murphy Fellowship (Northwestern University)
- University Scholar (University of Pittsburgh, College of Arts and Sciences)
- Fessenden-Trott Scholarship (University of Pittsburgh, School of Engineering)

RESEARCH INTERESTS

- Piezoelectric materials for energy harvesting applications
- Development of viscoelastic techniques to infer local polymer mobility in nanoreinforced polymers
- Development of models of describing the influence of nanoscale filler particles on the viscoelastic behavior of polymers
- Development of models describing the effective mechanical properties of carbon nanotube-reinforced polymers
- Micromechanical models for composite and advanced materials
- Modeling of the aging response of polymeric materials

TEACHING AND MENTORING EXPERIENCE

STEVENS INSTITUTE OF TECHNOLOGY

Hoboken, NJ

Associate Professor, Department of Mechanical Engineering (Aug 1 2010 - current)

Assistant Professor, Department of Mechanical Engineering (Fall 2004 – July 31, 2010)

- ME 345 Modeling and Simulation: Junior level required course for Mechanical Engineering students covers modeling and simulation strategies including model-block building, logical and data modeling, validation, trade-off analysis, decision-making, input and output statistical analysis, and process/system optimization. The focus of the class is teaching higher-level abstract analysis tools and strategies which are discipline and software independent. Examples of these modeling and simulation strategies are demonstrated in a number of areas, including solid and fluid mechanics, biomechanics,

thermodynamics, heat transfer, and manufacturing. Several software packages, including CAD/CAE software, are used in the class.

- NANO 600 Nanoscale Science and Technology. Co-developed and co-taught new core course for Nanotechnology Graduate Program (NGP) at Stevens. The objective of the class is to introduce students to the fundamentals of unique properties of nanostructures, their synthesis, and their applications in areas such as electronics, photonics, robotics, biotechnology, and environmental technology. Students will be able to gain important insights into when and why size matters, how the materials properties can be engineered through size control, how various nanostructures can be made, and what are the opportunities and challenges in realizing the projected potential of nanotechnology in a broad spectrum of engineering and sciences.
- NANO 525 Techniques of Surface and Nanostructure Characterization. (Assisted Svetlana Sukhishvili with the development and teaching of the course.) The goal of the course is to introduce students to the fundamentals, instrumentation, and applications of common analytical tools for surface and nanostructure characterization. The students will acquire the knowledge necessary for the selection of most suitable techniques and for the interpretation of the resultant information relevant to surface science and nanotechnology. The course consists of 60% lectures and 40% demonstrations and experiments in Stevens labs. Fisher has developed lectures on topics such as Atomic Force Microscopy (AFM) and Nanomanipulation.

NORTHWESTERN UNIVERSITY

Evanston, IL

Instructor, Department of Mechanical Engineering (Fall 2003)

- Taught Engineering Analysis III: System Dynamics, introducing students to the analysis of mechanical and electrical systems, conservation principles in Newtonian mechanics, and the numerical and analytical solution of ordinary differential equations
- Followed the peer instruction paradigm of teaching, where concept questions and group work are utilized to foster critical thinking and problem-solving skills in students as they work to develop an understanding of the course material
- Incorporated several technological tools as part of the class instruction, including daily Powerpoint slides and handouts of the lecture material, Blackboard® asynchronous discussion boards, and multimedia modules and enhanced lectures previously developed for the class
- Guest lecturer for several undergraduate (Engineering Analysis II: Statics and Dynamics, Mechanics of Materials) and graduate-level (Mechanics of Advanced Materials, Introduction to Nanotechnology) for classes taught within the Mechanical Engineering Department

NORTHWESTERN UNIVERSITY

Evanston, IL

Graduate Teaching Assistant Fellow, Searle Center for Teaching Excellence (2000, 2001)

Teaching Assistant, Department of Mechanical Engineering (September 1997 – December 2001)

Teaching Assistant, School of Education and Social Policy (Fall 2001)

- As a Graduate Teaching Assistant Fellow, designed and conducted workshops to prepare new Teaching Assistants in engineering and science disciplines
- Selected TA for pilot of Engineering Analysis II, part of the Engineering First curriculum development project at Northwestern.
- Served as head TA for EA II for 2 years, responsible for coordinating the efforts of all teaching assistants in addition to normal TA duties
- Nugent Fellowship Recipient (Spring 1998) for Engineering Analysis III.
- TA for various classes in the Mechanical and Civil Engineering departments: Continuum Mechanics, Introduction to Heat Transfer, Engineering Design and Communication, and Engineering Mechanics.
- TA for graduate level class in the School of Education and Social Policy (Interface Design for Interactive Learning Environments); responsible for significant upgrades to the syllabus, including required readings and the selection of software for student critiques

ADVANCED STUDIES PROGRAM, ST. PAUL'S SCHOOL

Concord, NH

Master Teacher (Summer 1998, Summer 1999)

- Developed and taught a five-week class (20 hrs/week) entitled "Introduction to Engineering" for gifted high school pre-seniors
- Course combined lecture, problem solving sessions, demonstrations, field trips, and hands-on projects to introduce students to various fields of engineering
- Topics covered during the class included: statics and dynamics of rigid bodies, conservation principles, vector calculus, computer programming, electrical circuits, and web programming

NORTHWESTERN UNIVERSITY

Evanston, IL

National High School Institute - Summer Program Instructor (Summer 1996, Summer 1997)

- Initiated and designed a course to introduce high school students to the field of mechanical engineering.
- Led independent research projects where students programmed a 3D particle dynamics code, which they used to analyze drag force effects

UNIVERSITY OF PITTSBURGH

Pittsburgh, PA

Undergraduate Teaching Assistant (September 1993 – May 1995)

- Prepared and led classroom recitation sections in college algebra and trigonometry
- Assisted in the development of a specialized "Computers in Calculus" program introducing students to computer-aided mathematical analysis.
- Conducted classroom training for future undergraduate teaching assistants and tutors.

TEACHING INTERESTS

- qualitative methods development for analysis of engineering student development and growth
- use of technology to enhance teaching methods for undergraduate engineering
- engineering curriculum development to better prepare students for careers in industry
- web-based, asynchronous, and long-distance teaching
- engineering outreach programs for younger, under-represented, and disadvantaged students

GRADUATE STUDENT and POST-DOCTORAL ASSOCIATE MENTORING**Completed**

- A.R. Bianco, MS graduate, Department of Mechanical Engineering, May 2016. "An examination of the impact of nanotechnology on the field of Pharmaceutical Manufacturing"
- Min Nie, PhD student, Department of Mechanical Engineering, Sept 2010-December 2015. "Carbon nanotube/polymer hybrid nanomaterials and interfacial properties".
- Dr. J. Belkowitz, PhD graduate, Department of Mechanical Engineering, January 2010-May 2015. "An analysis of the use of nano silica to mitigate the alkali-silica reaction in concrete". [currently Head of Research and Development, Intelligent Concrete LLC]
- Dr. G. Mago, PhD graduate, Department of Mechanical Engineering, Aug 2004-Dec 2008. "Processing-structure-property relationships for polymer nanocomposites." [currently Senior R&D Engineer, Lubrizol Advanced Materials, Avon Lake, OH]
- Dr. V. Challa, PhD graduate, Department of Mechanical Engineering, Aug 2004-Dec 2010. "Vibration energy harvesting for low power and wireless applications." [initially post-doctoral research associate, Interdisciplinary Microsystems Group, University of Florida; currently: Research Scientist, Oscilla Power, Inc., Salt Lake City, UT]
- L. Dong, MS graduate, Department of Mechanical Engineering, December 2011. "Two dimensional resonance frequency tuning approaches for vibration energy harvesting"
- Dr. Youn-Su Kim, Post-doctoral Research Associate, Department of Mechanical Engineering, January 2010-December 2012. "Nanotechnology-enabled energy storage for energy harvesting applications". [last known address: LG Electronics, Seoul, Korea]

In progress

- Lin Dong, PhD student, Department of Mechanical Engineering, Jan 2012-present. Tentative dissertation title: "Ambient vibration energy harvesting".
- Junjun Ding, PhD student, Department of Mechanical Engineering, Aug 2010-present. Tentative thesis title: "MEMS-scale vibration energy harvesting".
- Zhen Wang, PhD student, Department of Mechanical Engineering, Aug 2010-present. Tentative thesis title: "Micromechanical Modeling of Interphase and Interface Effects in Polymer Nanocomposites via an Augmented Mori-Tanaka Approach".
- Jayadurga (Durga) Iyer, PhD student, Department of Mechanical Engineering, Sept 2011-present. Tentative thesis title: "Processing-Induced crystallization of semicrystalline polymer nanocomposites".

UNDERGRADUATE SUMMER STUDENTS ADVISED AT STEVENS

1. Thomas Battaglia, freshmen, Mechanical Engineering (Summer 2015): 2D Magnetic Frequency Tuning Vibration Energy Harvesting Device
2. Daniel Kamieniecki, freshmen, Electrical Engineering (Summer 2015): 2D Magnetic Frequency Tuning Vibration Energy Harvesting Device
3. Jeffrey Paine, freshmen, Mechanical Engineering (Summer 2015): 2D Magnetic Frequency Tuning Vibration Energy Harvesting Device
4. Peter Smith, freshmen, Mechanical Engineering (Summer 2014): Shear-induced crystallization of semicrystalline polymer nanocomposites
5. Chris Volz, freshmen, Mechanical Engineering (Summer 2014): Nano-hybrid shish-kebab polymeric nanostructures
6. Daniel Wojciehowski, freshmen, Computer Engineering (Summer 2014): Nano-hybrid shish-kebab polymeric nanostructures
7. Jessica Berg, freshmen, Mechanical Engineering (Summer 2013): Vibration Energy Harvesting Demonstration Team
8. Allison Butler, freshmen, Mechanical Engineering (Summer 2013): Vibration Energy Harvesting Demonstration Team
9. Danny Duenas, junior, Biomedical Engineering (Summer 2013): Nano-Hybrid Shish Kebab Structure Characterization
10. Kaitlyn Halloran, junior, Mechanical Engineering (Summer 2013): Shear-induced Crystallization of Polypropylene
11. Joseph Huyett, junior, Mechanical Engineering (Summer 2013): Towards the Development of Underwater Sensor Platforms
12. Timothy Kliks, freshmen, Mechanical Engineering (Summer 2013): Vibration Energy Harvesting Demonstration Team
13. Christopher Vaughn, freshmen, Electrical Engineering (Summer 2013): Vibration Energy Harvesting Demonstration Team
14. Miles Winship, freshmen, Mechanical Engineering (Summer 2013): Vibration Energy Harvesting Demonstration Team
15. Dylan Boyle, freshmen, Electrical Engineering (Summer 2012): Vibration Energy Harvesting System
16. Anthony Cherone, freshmen, Chemical Engineering (Summer 2012): The Size Effect of Nano Silica on Mitigating Chemical Shrinkage in a Cement Composite
17. Tatyana Fedorenko, freshmen, Mechanical Engineering (Summer 2012): Vibration Energy Harvesting System
18. Henry Hernandez, sophomore, Mechanical Engineering (Summer 2012): 2D magnetic force modeling in COMSOL
19. Alexander Thieke, freshmen, Mechanical Engineering (Summer 2012): Vibration Energy Harvesting System
20. Drew Zahradka, freshmen, Mechanical Engineering (Summer 2012): Vibration Energy Harvesting System
21. Henry Hernandez, freshmen, Mechanical Engineering (Summer 2011): 2D magnetic force modeling in COMSOL
22. Jonathan Lee, freshmen, Mechanical Engineering (Summer 2011): An Excel-based Mori-Tanaka micromechanical model
23. Brian Ginebaugh, freshmen, Mechanical Engineering (Summer 2011): An Excel-based Mori-Tanaka micromechanical model
24. Joe Huyett, freshmen, Mechanical Engineering (Summer 2011): An autonomous vibration energy harvesting device

25. Angela LoPiccolo, freshmen, Electrical Engineering (Summer 2011): An autonomous vibration energy harvesting device
26. William J. Robbins, sophomore, Mechanical Engineering (Summer 2011): Autonomous system for piezoelectric energy harvesting
27. Yang Park, junior, Mechanical Engineering (Summer 2011): Modeling of the CSH reaction in concrete
28. Muhammad Nabil Bin Abdul Hamid, sophomore, Mechanical Engineering (Summer 2011): Development of a calorimeter for concrete characterization
29. Steven Rawson, junior, Mechanical Engineering (Summer 2011): Development of a course on Alternative Energy for middle school science teachers
30. Andres Paez, freshmen, Chemical Engineering (Summer 2011): SEM and TEM characterization of nanomaterials
31. Juan C. Coronel, junior, Physics (Summer 2010): Autonomous system for piezoelectric energy harvesting
32. Laura Barito, junior, Mechanical Engineering (Summer 2010): Shear-induced crystallization of semicrystalline polymer nanocomposites
33. William J. Robbins, freshman, Mechanical Engineering (Summer 2010): Autonomous system for piezoelectric energy harvesting
34. Travis J. Heithoff, senior, Mechanical Engineering (Summer 2010): Micromechanics modeling of polymer nanocomposites
35. Alyssa Antropow, freshman, Chemistry (Summer 2010): CVD growth of carbon nanostructures
36. David Barth, senior, Mechanical Engineering (Summer 2010): MEMS-scale intra-ocular pressure relief valve
37. George Murillo, junior, Mechanical Engineering (Summer 2009): Moisture absorption in polymer nanocomposites
38. Laura Barito, sophomore, Mechanical Engineering (Summer 2009): Virtual research experiences for undergraduates in nanotechnology
39. Justin Richman, junior, Mechanical Engineering (Summer 2009): Spray apparatus for layer-by-layer assembly of polymer films
40. Melissa Wiegand, freshmen, Electrical Engineering (Summer 2009): Characterization of piezoelectric polymers and polymer nanocomposites
41. Erich Rau, junior, Mechanical Engineering (Summer 2009): CAE software learning modules for the undergraduate mechanical engineering curriculum
42. Kevin Heany, sophomore, Mechanical Engineering (Summer 2009): Piezoelectric energy harvesting from environmental vibrations
43. Catherine Galdun, sophomore, Chemical Biology (Summer 2008): Piezoelectric nanocomposites prepared using immersion precipitation technique
44. Nicholas L. Walulik, freshmen, Mechanical Engineering (Summer 2008): Virtual research experiences for undergraduates in nanotechnology
45. Ellyn Griggs, freshmen, Mechanical Engineering (Summer 2008): Virtual research experiences for undergraduates in nanotechnology
46. Brandon Langley, junior, Electrical Engineering (Summer 2008): Piezoelectric-based vibrational energy scavenging
47. Michael Whalen, freshmen, Chemical Engineering (Summer 2008): Non-isothermal crystallization studies of semicrystalline polymer nanocomposites
48. Allyson Mackavage, freshmen, Chemical Engineering (Summer 2008): Non-isothermal crystallization studies of semicrystalline polymer nanocomposites
49. Jerry Dutreuil, Mech. Eng. (Summer 2006 thru Summer 2008): Melt-mixing of polymer nanocomposites (Stevens Scholar)
50. Ryan Oelkers, Chemistry (Summer 2006, Summer 2007): Solution-processing of MWNT-polymer nanocomposites (Stevens Scholar); New micromechanical models for polymer nanocomposites (Summer 2008, Summer 2009)
51. Matthew Csengto, Mech. Eng. (Summer 2007): Processing of polymer nanocomposites (Stevens Scholar)
52. David Barth, Mech. Eng. (Summer 2007-current): Imaging and nanomanipulation of nanomaterials and nanocomposites (Stevens Scholar)
53. Elie Fonrose, Mech. Eng. (Summer 2007): Micromechanics techniques for polymer nanocomposites (ME Department funding)
54. Marie-Joan Dutreuil, Elect & Computer Eng, (Summer 2006 – Summer 2007): Building a Nanotechnology Undergraduate Education (NUE) Learning Module
55. Pete Stellato, Mech. Eng. (Summer 2006, Summer 2007): Piezoelectric energy harvesting (Stevens Scholar)

56. Melissa Rhode, Mech. Eng. (Summer 2006): Viscoelastic characterization of polymers (Stevens Scholar)
57. Nick Strand, Mech. Eng. (Summer 2006): Engineers Without Borders (EWB) Project Assessment (Technogenesis Support)
58. Chloe Weck, Mech. Eng. (Summer 2006): Engineers Without Borders (EWB) Project Assessment (Technogenesis Support)

SENIOR DESIGN PROJECT ADVISOR

- 2014-15: Vessel Disablement: Zane Brylinski (ME), Quinn Conner (ME), Amanda Ingersoll (ME), Dillon Zahler (ME), Vincent Zappulla (ME)
- 2013-14: Project Persues: Michael Giglia (ME), Joseph Huyett (ME), Mark Siembab (ME)
- 2013-14: Sailboat Disablement: Paul Mascia (ME), Jonathan Samuel (ME), Jack vanRoden (ME)
- 2013-14: MATE (Marine Advanced Technology Education) Competition: Riaz Chowdhury (ME), Kevin Grudzinski (ME), Woosung Lee (ME), Stephanie Senkevich (ME), Christopher Stollen (ME)
- 2013-14: Vibration Energy Harvesting for Structural Health Instrumentation (VEHSI, co-advisor with M. Rutner, Civil Engineering): Joseph Gombar (ME), Diana Jandreski (ME), Curtis Stecyk (ME), Mark Conticchio (CE), John Murphy (CE), Lisa Tessitore (CE)
- 2012-13: Energy Harvesting Demonstration Unit: Joseph M. Bastelli (ME), John K. Lesch (ME), Pete Stackow (ME), Mark Roussey (ME)
- 2012-13: Human Powered Submarine: Kristopher Fonselius (ME), John (Jack) Lanigan (ME), Alex R. Pawlikowski (ME), Robert A. Truppner (ME)
- 2012-13: Autonomous Surface Vehicle (RoboBoats Competition): Muhammad Hamid (ME), Christopher Moyer (ME), John Santanello (ME), Maggie Weigel (ME)
- 2012-13: Therapeutic Toy for Children with Autism: Adam L. Marrakchi (ME), Mark Minervini (ME), Monica K. Ng (ME), Nicholas Stanton (ME)
- 2012-13: Energy Capture for Electronics Applications: Steven R. Czarnecki (ME), Timothy Schaake (ME), David Williams (ME), Ryan M. Walsh (ME)
- 2012-13: Project Perseus: John Dubolsky (ME), Thomas D. McMenamin (ME)
- 2011-12: Autonomous Surface Vehicle (RoboBoats Competition): Richard Adamski Jr. (ME), Rei Darwin Flores (ME), Edmund Hofmann (ME), Travis Krichman (ME), Shawn Warren (ME)
- 2011-12: Therapeutic Toy Design for Children Affected by Autism: Kendra Appleheimer (ME), Magdalena Majcher (ME), Jessica Schneider (ME), Nicholas Walulik (ME)
- 2010-11: Unmanned Maritime System (RoboBoats Competition): Laura Barito (ME), Ernie Guismano (ME), Derek Straub (ME), Justin Wenthold (ME)
- 2010-11: Piezoelectric-based Energy Harvesting Demonstration Unit: Matthew Aiosa (ME), Vincent Allegro (ME), Peter Manse (ME), Andrew Saccamano (ME)
- 2010-11: Therapeutic Toy Design for Children Affected by Autism: Kevin Heaney (ME), Rowena Lee (ME), Stephanie Miller (ME)
- 2009-10: Layer by Layer Spray System: Daniel Buckey (ME), Ryan Savage (ME), Maria Hurtado (ME), Tyler Kimble (BT), John Kearns (BT)
- 2009-10: Energy Harvesting for Industrial Building Applications: Oscar Jimenez (ME), Peter Aquino (ME), Manuel Vargas (ME), Jonathan Szucs (ME), Sinthya Alvarado (ME)
- 2009-10: UMV: Unmanned Maritime Vessel: John P. Ostroski (ME), Daniel Ruland (ME), Cosimo A. Mastropierro (ME)
- 2009-10: Autonomous Design Competition: Andrew Hang (ME), Shannon McFadden (ME), Richard D'Antonio (ME)
- 2008-09: Energy Harvesting Demonstration Unit. Members: Chris Burgess (ME), Brian Friebel (ME), Alex Heckman (ME), Joe Liccardo (ME), Joe Pticar (ME)
- 2008-09: Engineers Without Borders – Organic Water Purification System. Members: Nick Faust (ME), Matt Fitzsimmons (ME), Andrew Wohl (ME), Matt Wilson (ME), Aaron Kalbermatten (ME), Brent Chanin (ME)
- 2007-08: Energy Harvesting Demonstration Unit. Members: Christopher Lee (ME), Daniel Cheng (ME), Parag Patel (ME), Reginald Wood (ME), 2007-08
- 2007-08: Piezoelectric-based Energy Harvesting. Members: Eric McCormick (ME), Jim Waterman (ME), Scott Hamilton (ME), David Manning (ME), Shingo Matsubara (ME), 2007-08
- 2007-08: Engineers without Borders. Members: Jonathan Da Silva (ME), Kim Fellenz (ME), Kevin Gonzalez (ME), Emanuel Rios (ME), 2007-08 (co-advised with S. Thangam)

- 2007-08: Formula SAE Car: E85 Fuel Conversion. Members: Joshua Guerra (ME), Colin Harrier (ME), William Mehnert (ME), Matthew Grywalski (ME), Jerry Dutreuil (ME), 2007-08 (co-advised with J. Nazalewicz)
- 2006-07: Piezoelectric-based energy harvesting. Members: Gerald Delatour II (ME), April Hartmann (ME), Dennis Lueken (ME), Giuseppe Vitamia (ME), Christopher Wightman (ME), 2006-07
- 2006-07: Engineers Without Borders: Hydroelectric system design. Members: Greg Maietta (Civ Eng), Nick Strand (ME), David Velasco (ME), Katie Weatherall (B&T 08), Chloe Weck (ME), 2006-07 (co-advised with S. Thangam)
- 2005-06: Self-Powered Systems: Prototype design for a MEMS-based energy scavenging device. Members: Keith McDougall (ME), John Sharon (ME), Rio Silitonga (ME), and Pete Worley (ME), 2005-06

PATENTS and PATENT DISCLOSURES

- US Patent 20150333598, Vibration Energy Harvesting for Structural Health Instrumentation (with M. Conticchio, J. Gombar, D. Jandreski, J. Murphy, C. Stecyk, L. Tessitore, L. Brunell, B. McNair, and M. Rutner), publication date November 19, 2015
- US Patent 20140127584, Popcorn-Like Growth of Graphene-Carbon Nanotube Multi-stack Hybrid 3D Architecture for Energy Storage Devices (with Y.S. Kim, K. Kumar, and E.H. Yang), publication date May 8, 2014
- Internal Patent Disclosure: Resonant Frequency Tunable Energy Harvesting Device (with V. Challa, MG Prasad, and Y Shi), January 2007.

BOOK CHAPTERS

5. J. Park, H. Pan, M. Mezger, S. Nicolich, J.M. Centrella, F.T. Fisher, M. Malik, S. Aktas and D.M. Kalyon (2016). "Chapter 8: Mixing, coating, and shaping", in *Advanced Processing Technologies for Next Generation Energetic Materials*, M. Mezger, M. Pantoya, L. Groven, K.J. Tindle, and D.M. Kalyon (Editors), Taylor & Francis/CRC Press, Boca Raton, Florida, *under review*
4. J.S. Belkowitz, W.B. Belkowitz, R.D. Moser, F.T. Fisher, and C.A. Weiss Jr. (2015). "The Influence of Nano Silica Size and Surface Area on Phase Development, Chemical Shrinkage and Compressive Strength of Cement Composites", in *Nanotechnology in Construction: Proceedings of NICOM5*, K.S. Sobolev and S.P. Shah (Editors), Springer International Publishing, Switzerland
3. J. Ding, V.R. Challa, M.G. Prasad, and F.T. Fisher (2012). "Vibration Energy Harvesting and its Application for Nano- and Microrobotics", in *Micro/Nano-robotics for Biomedical Applications*, Y. Guo (Editor), Springer Science+Business Media, LLC, New York.
2. F.T. Fisher and L.C. Brinson (2006). "Nanomechanics of Nanoreinforced Polymers", in *Handbook of Theoretical and Computational Nanotechnology*, M. Reith and W. Schommers (Eds.), American Scientific Publishing.
1. F.T. Fisher, D.A. Dikin, X. Chen, and R.S. Ruoff (2005). "Nanomanipulator Measurements of the Mechanics of Nanostructures and Nanocomposites", in *Applied Physics of Nanotubes: Fundamentals of Theory, Optics and Transport Devices*, Slava V Rotkin and Shekhar Subramoney (Eds.), Springer Series in Nanoscience and Technology.

REFEREED JOURNAL ARTICLES §

45. L. Dong, M. Grissom, M.G. Prasad, and F.T. Fisher (2016). "Application of mechanical stretch to tune the resonance frequency of hyperelastic membrane-based energy harvesters", to be submitted to *Sensors and Actuators*.

§ 3852 citations via Google Scholar as of July 2016. Hirsch h -index of 22 (One has index h if h of his N_p papers have at least h citations each, and the other $(N_p - h)$ papers have at most h citations each.).

44. A. Senturk-Ozer, S. Aktas, F.T. Fisher, and D.M. Kalyon (2016). "Electrospinning of suspensions of poly(caprolactone) and multiwalled carbon nanotubes: Effects of nanotube concentration and processing parameters on the dynamics of the spinning process and fiber characteristics", submitted to *Journal of Applied Polymer Science*.
43. J. Ding, F.T. Fisher, and E.H. Yang (2016). "Direct transfer of corrugated graphene sheets as stretchable electrodes", *Journal of Vacuum Science and Technology B*, accepted.
42. J.I. Ganapathi, D.M. Kalyon, and F.T. Fisher (2016). "Effect of multistage sonication on dispersive mixing of polymer nanocomposites", submitted to *Journal of Applied Polymer Science*
41. M. Nie, D.M. Kalyon, and F.T. Fisher (2016). "Measurement of interfacial shear strength between carbon nanotube and polymer using a nanobridge structure", manuscript in preparation.
40. J.I. Ganapathi, F.T. Fisher and D.M. Kalyon (2016). "Distributive mixing of carbon nanotubes in poly(caprolactone) via solution and melt processing: Viscoelasticity and shear-induced crystallization behavior versus mixing indices", *Journal of Polymer Science Part B: Polymer Physics*, in press, DOI: **10.1002/polb.24137**
39. Z. Wang, R. Oelkers, K.C. Lee, and F.T. Fisher (2016). "Annular Coated Inclusion model for spherical inclusions and applications for polymer nanocomposites: Part 2. Cylindrical inclusions", *Mechanics of Materials*, **101**, 50-60.
38. Z. Wang, R. Oelkers, K.C. Lee, and F.T. Fisher (2016). "Annular Coated Inclusion model for spherical inclusions and applications for polymer nanocomposites: Part 1. Spherical inclusions", *Mechanics of Materials*, **101**, 170-184.
37. L. Dong, M.G. Prasad, and F.T. Fisher (2016). 'Two dimensional resonance frequency tuning approach for vibration based energy harvesting', *Smart Materials and Structures*, **25**, 065019
36. L. Dong, M. Grissom, and F.T. Fisher (2015). 'Resonant frequency of mass-loaded membranes for vibration energy harvesting applications', *AIMS Energy*, **3** (3), 344-359.
35. M. Nie, D.M. Kalyon, and F.T. Fisher (2015). 'Reverse kebab structure formed inside carbon nanofibers via nanochannel flow', *Langmuir*, **31**, 10047-10055.
34. J.S. Belkowitz, W.B. Belkowitz, K. Nawrocki, and F.T. Fisher (2015). 'The impact of nano silica size and surface area on concrete properties', *ACI Materials Journal*, **112** (3), 419-428.
33. M. Nie, D.M. Kalyon, and F.T. Fisher (2014). 'Interfacial load transfer in polymer/carbon nanotube nanocomposites with a Nanohybrid Shish Kebab modification', *ACS Applied Materials & Interfaces*, **6**, 14886-14893.
32. J. Ding, K. Du, I. Wathuthanthri, C.H. Choi, F.T. Fisher, and E.H. Yang (2014). 'Transfer Patterning of Large-Area Graphene Nanomesh via Holographic Lithography and Plasma Etching', *Journal of Vacuum Science and Technology B*, **6** (32), 2166 [recognized by journal as a 'most read' article for month of October 2014]
31. J.S. Belkowitz, W.B. Belkowitz, M.A. Best, and F.T. Fisher (2014). 'Colloidal Silica Admixture', *Concrete International*, **36** (7), 59-65.
30. K. Kumar, Y.S. Kim, X. Lin, J. Ding, F. T. Fisher, and E.H. Yang (2013). 'Chemical vapor deposition of carbon nanotubes on monolayer graphene substrates: reduced etching via suppressed catalytic hydrogenation using C₂H₄', *Chemistry of Materials*, **25**, 3874-3879.
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- *31. M. Nie and F.T. Fisher (2013). "Characterization of the Interfacial Strength of Nano Hybrid Shish-Kebab Crystal Structure between Carbon Nanotubes and Polymer", American Society for Composites (ASC) 28th Annual Technical Conference, September 9-11, State College, PA
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74. J. Ding, S. Fu, F.T. Fisher, and E.Y. Yang (2016). "Vertically aligned carbon nanotube-supported graphene as stretchable electrodes", 2016 Materials Research Society (MRS) Fall Meeting, November 27 – December 2, Boston, MA.
73. Z. Zhang, J. Ding, K.G. Yager, B. Ocko, F.T. Fisher, and C.T. Black (2016). "Nanoconfined polymer electrolyte for rechargeable thin film Lithium-ion batteries", 2016 Materials Research Society (MRS) Fall Meeting, November 27 – December 2, Boston, MA.

¹ F. T. Fisher or his students presented all talks listed here. Talks presented by colleagues and co-workers are not listed.

72. Z. Wang and F.T. Fisher (2016). "Annular Coated Inclusion model and applications for polymer nanocomposites", 53rd Annual Technical Meeting of the Society of Engineering Science (SES), October 2-5, University of Maryland, College Park, Maryland.
71. L. Dong, M. Grissom, and F.T. Fisher (2016). "Resonant Frequency Tuning Approaches for Membrane-Based Electroactive Polymer Energy Harvesters", 53rd Annual Technical Meeting of the Society of Engineering Science (SES), October 2-5, University of Maryland, College Park, Maryland.
70. G. Bartus and F.T. Fisher (2016). "Barriers and openings to systems thinking skills with K-12 teachers", 2016 ASME International Mechanical Engineering Conference and Exposition (IMECE), November 11 – November 17, Phoenix, AZ.
69. L. Dong, M. Grissom, and F.T. Fisher (2016). "Application of bias-voltage to tune the resonant frequency of membrane-based electroactive polymer energy harvesters", 2016 SPIE Commercial + Scientific Sensing and Imaging Conference: Energy Harvesting and Storage: Materials, Devices, and Applications VII, Proc. of SPIE Vol. 9865, April 17-21, Baltimore, MD.
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66. J. Ding, K. Du, F. T. Fisher, E.H. Yang (2015). "Transferring Graphene Nanostructures onto a Transparent Flexible Substrate", The 59th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication, May 26-29, San Diego, CA.
65. J. Ding, K. Du, F. T. Fisher, E.H. Yang (2015). "Biodegradable Magnesium Fuel Cell with Graphene as a Transparent Cathode", 2015 TechConnect World Innovation Conference and Expo, June 14-17, National Harbor, Maryland.
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62. M. Nie and F.T. Fisher (2013). "Characterization of the Nano Hybrid Shish-Kebab Interface for Polymer Nanocomposite Applications", 28th Annual Technical Conference of the American Society for Composites, September 9-11, State College, PA.
61. Z. Wang and F.T. Fisher (2013). "Analytical Solution of the Dilute Strain Concentration Tensor for Coated Spherical Inclusions, and Applications for Polymer Nanocomposites", 28th Annual Technical Conference of the American Society for Composites, September 9-11, State College, PA.
60. Y.-S. Kim, K. Kumar, X. Li, F.T. Fisher, and E.H. Yang (2013). "Fabrication and characterization of 3-D graphene-CNT architectures towards supercapacitor applications", TechConnect World 2013 Conference, Expo and National Innovation Summit, May 13-16, National Harbor, Maryland
59. F.T. Fisher, R. Besser, K. Sheppard, C.H. Choi, and E.H. Yang (2012). "A Program to Enhance Undergraduate Exposure to Nanotechnology", American Society for Engineering Education Fall 2012 Mid-Atlantic Conference, November 2-3, Ocean County College, Toms River, NJ.
58. D. M. Kalyon, F. Fisher and G. Mago, "Nanocomposites of polymers compounded with C nanotubes: Effects on crystallization, cross-linking, viscoelasticity and development of ultimate properties",

MACROMEX 2011-2nd Binational meeting on Advances in Polymer Science, Riviera Maya, Q. Roo, Dec. 10, 2011.

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56. F.T. Fisher and H. Man (2011). "Virtual Research Experiences for Undergraduates in Nanotechnology", 2011 American Society for Engineering Education Conference, June 26-29, Vancouver, BC, Canada.

55. F. T. Fisher (2011). "Leveraging the Crystallization of Semicrystalline Polymer Nanocomposites", 2011 Joint ASME/ASCE/SES Conference on Mechanics and Materials (McMAT2011), May 31 – June 2, Chicago, IL.

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48. S.F. Bartolucci, G. Mago, H. Gevgilili, S. Vural, K. Dikovics, D.M. Kalyon, and F.T. Fisher (2009). "Investigation of the Properties of PEEK-Nanotube Composites Prepared by Solution Methods", ASME International Mechanical Engineering Conference and Exposition (IMECE), November 13-19, Lake Buena Vista, FL.

47. V. Challa and F.T. Fisher (2009). "Design Considerations for MEMS Scale Vibration Energy Harvesting," ASME International Mechanical Engineering Conference and Exposition (IMECE), November 13-19, Lake Buena Vista, FL.

46. V. Challa and F.T. Fisher (2009). "Towards a Self-Tunable Wide Frequency Bandwidth Vibration Energy Harvesting Device," ASME International Mechanical Engineering Conference and Exposition (IMECE), November 13-19, Lake Buena Vista, FL.

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40. G. Mago, D.M. Kalyon, and F.T. Fisher (2008). "Effect of nanoparticles on microstructure and crystallization behavior of Polyvinylidene fluoride (PVDF) and PVDF nanocomposites membranes prepared using immersion precipitation technique", *236th National Meeting & Exposition of the American Chemical Society*, August 17-21, Philadelphia, PA.
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38. S.F. Bartolucci, G. Mago, D.M. Kalyon, and F.T. Fisher (2008). "Mechanical Properties of Carbon Nanotube-PEEK Composites", *ASME International Mechanical Engineering Conference and Exposition (IMECE)*, October 31-November 6, Boston, MA.
37. G. Mago, R. Oelkers, D.M. Kalyon, and F.T. Fisher (2008). "Microstructure and crystallization behavior of Polyvinylidene fluoride (PVDF) nanocomposites prepared using coprecipitation technique", *ASME International Mechanical Engineering Conference and Exposition (IMECE)*, October 31-November 6, Boston, MA.
36. V.R. Challa, M.G. Prasad, and F.T. Fisher (2008). *Invited*. "A High Efficiency Multi-beam Array Tunable Energy Harvesting Device for Powering Wireless Sensors", *IEEE 17TH International Symposium on the Applications of Ferroelectrics (ISAF)*, February 24-27, Santa Fe, New Mexico.
35. G. Mago, C. Velasco-Santos, A.L. Martinez-Hernandez, D.M. Kalyon, and F.T. Fisher (2007). "Effect of Functionalization on the Crystallization Behavior of MWNT-PBT Nanocomposites", *Proceedings of the 2007 MRS Fall Meeting*, November 26-30, Boston, MA.
34. G. Mago, F.T. Fisher, and D.M. Kalyon (2007). "Effect of shearing on crystallization behavior and morphology of PVDF nanocomposites", *2007 Virtual Conference on Nanoscale Science and Technology (VC-NST)*, October 21-25, University of Arkansas, Fayetteville, Arkansas.
33. G. Mago, F.T. Fisher, and D.M. Kalyon (2007). "Nanoparticle-enhanced processing-induced crystallization of PVDF and PVDF nanocomposites", *44th Annual Technical Meeting of the Society of Engineering Science*, October 21-24, Texas A&M University, College Station, TX.
32. C. Chassapis, H. Hadim, S.K. Esche, R. Ubell, and F.T. Fisher (2007). "Educational underpinnings of an online undergraduate mechanical engineering degree for non-traditional learners", *2007 Engineering Education NSF Awardees Conference*, Arlington, VA, USA, September 26-28, 2007.
31. F.T. Fisher (2007). "NUE: Virtual research experiences for undergraduates in nanotechnology (VREUN)", *2007 Engineering Education NSF Grantees Conference*, September 26-28, Arlington, VA.
30. F.T. Fisher (2007). "Nanomechanics and polymer nanocomposites", *NIST Workshop on Materials Characterization for Nanoscale Reliability*, August 14-16, Boulder, CO.

29. V.R. Challa, M.G. Prasad, Y. Shi, and F.T. Fisher (2007). "Resonant frequency tunable vibration energy harvesting device", *The 6th International Workshop on Structural Health Monitoring*, September 11-13, Stanford University, Stanford, CA.
28. G. Mago, J. A. Dutreuil, F.T. Fisher, and D.M. Kaylon (2007). "Structural formation in poly(butylene terephthalate) and PBT nanocomposites during uniaxial deformation", *ASME International Mechanical Engineering Conference and Exposition (IMECE)*, November 11-15, Seattle, WA.
27. V.R. Challa, M.G. Prasad, Y. Shi, and F.T. Fisher (2007). "A wide frequency range tunable vibration energy harvesting device using magnetically induced stiffness", *ASME International Mechanical Engineering Conference and Exposition (IMECE)*, November 11-15, Seattle, WA.
26. F.T. Fisher, H. Du and S. Sukhishvili (2007). "A cross-disciplinary graduate degree concentration in nanotechnology", 2007 American Society for Engineering Education Conference, June 24-27, Honolulu, HI.
25. F.T. Fisher, H. Hadim, S. Esche, R. Ubell, and C. Chassapis (2007). "Feasibility of a fully online undergraduate mechanical engineering degree for non-traditional learners", 2007 American Society for Engineering Education Conference, June 24-27, Honolulu, HI.
24. G. Mago, F.T. Fisher, and D.M. Kaylon (2007). "Nanoparticle-enhanced shear-induced crystallization of semicrystalline polymer nanocomposites", *2007 Joint ASME/ASCE/SES Conference on Mechanics and Materials (McMAT2007)*, June 3-7, Austin, TX.
23. G. Mago, F.T. Fisher, and D.M. Kaylon (2006). "Effect of shearing on the crystallization behavior of poly(butylene terephthalate) and PBT nanocomposites", *ASME International Mechanical Engineering Conference and Exposition (IMECE)*, November 5-10, Chicago, IL.
22. FT Fisher and C Chassapis (2006). "Guided CAE software learning modules for the undergraduate mechanical engineering curriculum", 2006 American Society for Engineering Education Conference, June 18-21, Chicago, IL.
21. FT Fisher and KC Lee (2005). "Micromechanics modeling of the frequency-domain behavior of nanotube-reinforced polymers: Interphase effects", *2005 ASME International Mechanical Engineering Conference and Exposition (IMECE)*, November 5-11, Orlando, FL.
20. FT Fisher, KC Lee, and LC Brinson (2005). "Viscoelastic properties of non-bulk polymer interphases in nanotube-reinforced polymers", *2005 Society for Experimental Mechanics Annual Conference*, June 7-9, Portland, OR.
19. KC Lee and FT Fisher (2005). "Micromechanics modeling of nanotube-reinforced polymers", *2005 Joint ASME/ASCE/SES Conference on Mechanics and Materials (McMAT2005)*, June 1-3, Baton Rouge, LA.
18. W Ding, FT Fisher, X Chen, DA Dikin, and RS Ruoff (2004). "Nanotube-polymer Composite Characterization via Nanomanipulation Experiments", *11th US-Japan Conference on Composite Materials*, September 9-11, Yamagata, Japan.
17. Fisher, FT, Thillaiyan, R, Meade, L, Levy, B, Ruoff, RS, and LC Brinson (2003). "The impact of chemical functionalization on nanoparticle-reinforced polymers: Nanoscale characterization and effective mechanical properties", *18th American Society of Composites (ASC) Technical Conference*, October 20-22, Gainesville, FL.
16. Xu, T, Fisher, FT, Brinson, LC, and RS Ruoff (2003). "Bone-Shaped Nanomaterials for Nanocomposites Applications", *18th American Society of Composites (ASC) Technical Conference*, October 20-22, Gainesville, FL.
15. Fisher, FT, Ruoff, RS, and LC Brinson (2003). "Direct nanoscale observation of a non-bulk polymer interphase in nanotube-polycarbonate systems", *The 14th International Conference on Composite Materials (ICCM-14)*, July 14-18, San Diego, CA.

14. Fisher, FT, and LC Brinson (2003). "Macroscale experimental evidence of a reduced-mobility non-bulk polymer phase in nanotube-reinforced polymers", *44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, April 7-10, Norfolk, VA.
13. Ruoff, RS, Xu, T, Kim, W-S, Fisher, FT, Brinson, LC (2002). "Ordered Carbon Nanotube Array Nanocomposites", *17th Annual Meeting of the American Society for Composites*, October 21-23, West Lafayette, IN.
12. Fisher, FT, and LC Brinson (2002). "Viscoelasticity and Physical Aging of Carbon Nanotube-reinforced Polymers", *SEM 2002 Annual Conference on Experimental and Applied Mechanics*, June 10-12, Milwaukee, WI.
11. Brinson, LC, and FT Fisher (2001). "Effects of Curvature on the Modulus of Nanoreinforced Polymers", *TMS 2001 Fall Meeting*, November 5-8, Indianapolis, IN.
10. Fisher, FT, and LC Brinson (2001). "Nano-, Micro-, and Macro-mechanics of Nanoreinforced Polymeric Materials", *NASA Langley Workshop on Nanotechnology - Computational Materials, Modeling, and Simulation*, October 16, Langley, VA.
9. Fisher, FT, and LC Brinson (2001). "Viscoelastic Response of Carbon Nanotube-reinforced Polymers", *6th US National Congress on Computational Mechanics*, August 1-3, Dearborn, MI.
8. Fisher, FT, and LC Brinson (2001). "Effects of Curvature on the Elastic Modulus of Carbon Nanotube-reinforced Polymers", *2001 Mechanics and Materials Summer Conference*, June 27-29, San Diego, CA.
7. Fisher, FT, and PL Peterson (2001). "Adaptive Learners and Learning in Bioengineering", presented at the symposium "Learning for the Future in Bioengineering: Building Bridges between Learning Scientists and Engineering Educators", *the 82nd Annual Meeting of the American Educational Research Association*, April 10-14, Seattle, WA.
6. Fisher, FT, and PL Peterson (2001). "Adaptive Expertise – A New Way to Think About Student Learning", *ASEE IL/IN Sectional Conference*, March 29-31, Purdue University, West Lafayette, IN.
5. Fisher, FT, Peterson, PL, Falk, CL, and D Kanter (2000). "Measuring Adaptive Expertise in Undergraduate Engineering Students", *BMES 2000*, October 12-14, Seattle, WA. (Poster Session)
4. Falk, CL, Fisher, FT, Peterson, PL, and D Kanter (2000). "Teaching Toward Adaptive Expertise in Bioengineering", *The World Congress on Medical Physics and Biomedical Engineering*, July 27, 2000, Chicago, IL.
3. Peterson, PL, and FT Fisher (2000). "Learners and Learning in Biomedical Engineering: Project Overview", *VaNTH Quarterly Meeting*, July 26-27, 2000, Northwestern University, Chicago, IL.
2. Fisher, FT (1999). "Influence of the Interphase in Polymer Matrix Composites", *the 36th Annual Technical Meeting of the SES*, Austin, TX.
1. Brinson, LC and FT Fisher (1997). "Combined Aging and Moisture Effects in Polymers and Polymer Matrix Composites", *the 1997 International Mechanical Engineering Conference and Exposition (IMECE 97)*, Dallas, TX.

INVITED PRESENTATIONS

30. F.T. Fisher, "Leveraging Crystallization in Semicrystalline Polymer Nanocomposites", Rutgers University, October 22, 2014.

29. F.T. Fisher, "Multiscale Science and Engineering: Big Advances Coming From The NanoWorld", New Jersey City University (NJCU), September 19, 2012.
28. F.T. Fisher, "Nanoparticle-Enhanced Crystallization of Semicrystalline Polymer Nanocomposites", TMS Annual Meeting, March 11-15, 2012, Orlando, FL.
27. F.T. Fisher, "Nanoparticle-Enhanced Crystallization of Semicrystalline Polymer Nanocomposites", Department of Mechanical and Industrial Engineering, New Jersey Institute of Technology, November 2, 2011.
26. F.T. Fisher and E.H. Yang, "Graphene-Based Supercapacitors for Energy Harvesting Applications", US Army Armament Research, Development, and Engineering Center (ARDEC), Picatinny Arsenal, NJ, July 6, 2011
25. FT Fisher and V Challa. "Towards Microscale Ambient Vibration Energy Harvesting", December 7, 2010, E2 Micro/Nano Energy Harvesting Technology Workshop, Stevens Institute of Technology, Hoboken, NJ.
24. F.T. Fisher. "Towards semicrystalline polymer nanocomposites for vibration energy harvesting applications", Department of Mechanical Engineering and Materials Science and Department of Civil and Environmental Engineering (joint), Duke University, September 7, 2010.
23. F.T. Fisher. "Processing-Induced Crystallization of Semicrystalline Polymer Nanocomposites", 5th Annual Polymer Nanocomposites Conference, Lehigh University, March 8-10, 2010.
22. F.T. Fisher. "Virtual Research Experiences for Undergraduates in Nanotechnology", National Academy of Engineering (NAE) Frontiers of Engineering Education (FOEE) symposium, November 15-18, Herndon, VA
21. V Challa and F.T. Fisher. "Vibration Energy Harvesting using Magnetic Materials", November 2, 2009, Electron Energy Corporation, Landisville, PA.
20. FT Fisher. "Ambient Vibration Energy Harvesting", August 24, 2009, KCF Technologies, Inc, State College, PA.
19. FT Fisher and V Challa. "Ambient Vibration Energy Harvesting", June 2, 2009, E2 Alternative Energy Workshop, Stevens Institute of Technology, Hoboken, NJ.
18. FT Fisher. "Crystallization and Semicrystalline Polymer Nanocomposites", March 9, 2009, School of Polymer, Textile and Fiber Engineering, Georgia Institute of Technology, Atlanta, GA.
17. FT Fisher and DM Kalyon. "Processing of Semicrystalline Polymer Nanocomposites", October 15, 2008, Nanotechnology Information Exchange, Picatinny Arsenal, Picatinny, NJ
16. FT Fisher. "Current Research Opportunities in Polymer Nanocomposites", April 24, 2008, Ph.D. Nanoscale Science Seminar series, University of North Carolina at Charlotte.
15. V.R. Challa, M.G. Prasad, and F.T. Fisher (2008). "A High Efficiency Multi-beam Array Tunable Energy Harvesting Device for Powering Wireless Sensors", IEEE 17TH International Symposium on the Applications of Ferroelectrics (ISAF), February 24-27, Santa Fe, New Mexico
14. F.T. Fisher (2008). "Processing-induced crystallization of polymer nanocomposites" (invited, poster session), Gordon Research Conference on Composites (Nanocomposites), January 13-18, Ventura, CA.
13. FT Fisher. "Current Issues in Polymer Nanocomposites", November 30, 2007, Department of Mechanical Engineering, University of New Hampshire.

12. FT Fisher. "Current Issues in Polymer Nanocomposites", April 26, 2007, Department of Materials Science and Engineering, Rensselaer Polytechnic Institute.

11. FT Fisher. "Nanotechnology – A Primer", October 21, 2006, Emerging Technology Seminar and Workshop, Stevens Institute of Technology Executive Master of Technology Management Program.

10. FT Fisher. "The Nanotechnology of Nanocomposites", August 1, 2006, Automated Tooling Systems, Toronto, ON, Canada.

9. FT Fisher. "Viscoelastic Behavior of Polymer Nanocomposites", April 20, 2006, State University of New York at Stony Brook, Long Island, NY.

8. FT Fisher. "Mechanical Behavior of Polymer Nanocomposites", November 3, 2005, City College of New York, New York, NY.

7. FT Fisher. "A Perspective on Educational Technologies and the Future of Engineering Education", December 13, 2005, Research & Innovation in Engineering Education seminar, Stevens Institute of Technology.

6. FT Fisher. "Nanomechanics of Nanocomposites", October 26, 2005, Chemical, Biomedical, and Materials Department, Stevens Institute of Technology.

5. FT Fisher. "Nanotube-Reinforced Polymers", August 3, 2004, Americhem, Cuyahoga Falls, OH.

4. FT Fisher and JL Terry. "Peer Instruction and Web-based Enhancement of Undergraduate Engineering Courses: Practical Implementation", April 26, 2004, Purdue University, Department of Biomedical Engineering, West Lafayette, IN.

3. FT Fisher. "The Mechanical Behavior of Carbon Nanotube-Reinforced Polymers", January 27, 2004, University of Louisville, Department of Mechanical Engineering, Louisville, KY.

2. FT Fisher. "Mechanical Response of Nanotube-Polymer Systems", December 13, 2002, Oklahoma State University, Department of Chemistry, Stillwater, OK.

1. FT Fisher. "Biomedical Engineering Education: A Learning Sciences Perspective", March 29, 2001, Purdue University, Department of Biomedical Engineering, West Lafayette, IN.

SHORT COURSES/WORKSHOPS ATTENDED

- Integration of Simulation Technology into Engineering Curricula (ISTEC): A University – Industry Workshop, July 22-23, 2011, Cornell University, Ithaca, NY
- National Institute of Standards and Technology (NIST) Workshop on Materials Characterization for Nanoscale Reliability, August 14-16, 2007, Boulder, CO
- NSF CAREER Proposal Writing Workshop, Hawaii Tokai International College, Honolulu, Hawaii, March 23, 2007.
- NSF Summer Institute Short Course on Multiscale Modeling and Simulation of Nano Mechanics and Materials, Northwestern University, Evanston, IL, June 7-11 2004. (NSF Fellowship covering tuition expense)

PROFESSIONAL SERVICE

- Session Chair, 'Electric/Dielectric Nanocomposites', 28th Annual Technical Conference of the American Society for Composites (2013), September 9-11, State College, PA.
- Chair, American Society of Mechanical Engineering (ASME) Materials Division Polymers Technical Committee (7/2010-6/2012)
- Vice-Chair, American Society of Mechanical Engineering (ASME) Materials Division Polymers Technical Committee (7/2008-6/2010)
- Advisory Board, Pre-Engineering Program at Academies @ Englewood (High School), Englewood, NJ

- Session co-Chair, 'Processing of Nanocomposites II', 2012 TMS Annual Meeting, March 11 – 15, Orlando, FL
- Reviewer, ASME Society-Wide Micro/Nano Technology Student Poster Forum, 2011 ASME International Mechanical Engineering Conference and Exposition (IMECE), November 11 – November 17, Denver, CO
- Symposium Organizer, 'Polymer Nanocomposites for Energy Generation and Storage', 2011 ASME International Mechanical Engineering Conference and Exposition (IMECE), November 11 – November 17, Denver, CO
- Session co-Chair, 'Polymer Nanocomposites', 2011 ASME International Mechanical Engineering Conference and Exposition (IMECE), November 11 – November 17, Denver, CO
- Session co-Chair, 'Computers in Education General Technical Session II', 2011 ASEE Annual Conference, June 26-29, Vancouver, British Columbia, Canada
- Symposium Organizer, 'Polymer Nanocomposites: Structure and Function', 2011 Joint ASME/ASCE/SES Conference on Mechanics and Materials (McMAT2011), May 31 – June 2, 2011, Chicago, IL
- External International Reviewer: Science & Engineering Research Council (SERC), a part of the Agency for Science, Research & Technology (A*STAR) of Singapore
- External Reviewer: Leaders Opportunity Fund (LOF), a program of the Canada Foundation for Innovation (CFI)
- Proposal Review Panel, Center for Functional Nanomaterials (CFN), Brookhaven National Lab (2009-11)
- Guest Editor, Journal of Nanomaterials, Special Issue on Polymer Nanocomposite Processing, Characterization, and Applications, to be published Spring 2010
- Editorial Board, Journal of Computational and Theoretical Nanoscience
- Technical Reviewer, *Long-Term Durability of Polymer Matrix Composites*, K. Pochiraju, G. Tandon, and G. Schoepner
- Book proposal reviewer, CRC Press/Taylor & Francis
- Topic co-organizer, "Nanocomposites", 2009 ASME International Mechanical Engineering Conference and Exposition (IMECE), November 13 – November 19, Lake Buena Vista, FL.
- US Army Engineer Research and Development Center (ERDC) Basic Research proposal review, 2009
- DOD Proposal reviewer, Strategic Environmental Research and Development Program (SERDP), 2009
- NSF Review Panelist, IIP SBIR/STTR, 2010, 2011
- NSF Review Panelist, CMMI Materials Processing and Manufacturing program, 2009
- Book proposal review, Wiley, 2009
- Member of Conference Committee, Stevens organizer/host, and Panelist, New Jersey Technology Council Nanotechnology Prototype Showcase, October 15 2008, held at Stevens Institute of Technology.
- Topic co-organizer, "Current Issues In Polymer Nanocomposites", 2008 ASME International Mechanical Engineering Conference and Exposition (IMECE), October 31 – November 6, Boston, MA.
- Session chair, "Active Nanocomposites", Society of Engineering Science 2007 Annual Conference, October 22-24, Texas A&M University, College Station, TX.
- Session organizer, "Active Nanocomposites III: Characterization of Carbon Nanotube-Based Composites", 2007 ASME Applied Mechanics and Materials Conference (McMAT2007), June 3-7, Austin, TX.
- Outside technical reviewer for the Maryland Industrial Partnerships Program at the University of Maryland (Summer 2007)
- Topic organizer, "Polymeric Materials", 2006 ASME International Mechanical Engineering Conference and Exposition (IMECE), November 5-10, 2006, Chicago, IL.
- Reviewed abstracts submitted to the ASEE National Conference, Chicago, IL, June 18-21, 2006
- Reviewed abstracts submitted to the ASME IMECE, Orlando, FL, November 5-11, 2005
- NSF Reviewer, Division of Chemical, Bioengineering, Environmental, and Transport Systems, unsolicited proposals, 2008
- NSF Review Panelist, CMMI Materials Processing and Manufacturing program, 2008, 2009
- NSF Review Panelist, Nanotechnology Undergraduate Education (NUE) program, 2006
- NSF Review Panelist, Curriculum, Course, and Laboratory Improvement (CCLI) program, 2005
- NSF Review Panelist, Division of Design, Manufacture, and Industrial Innovation (DMI), 2005
- Session organizer, "Micromechanical and Multiscale Modeling of Nanoreinforced Polymers", 2005 American Society for Composites Annual Technical Conference, September 7-9, Drexel University, Philadelphia, PA.
- Symposium co-organizer, "Advanced Nanocomposite Systems", 2005 Joint ASME/ASCE/SES Conference on Mechanics and Materials (McMAT2005), June 1-3, Baton Rouge, LA.

- Reviewed journal articles submitted for publication in: Journal of Micromechanics and Microengineering, ASME Journal of Vibration and Acoustics, Composites Science and Technology, Journal of Polymer Science Part B: Polymer Physics, Nanotechnology, Computer Methods in Applied Mechanics and Engineering, Polymer, Composites Part A, Composites Part B, Journal of Biomedical Nanotechnology, International Journal of Nanomedicine, Journal of Biomedical Materials Research Part A, Applied Physics Letters, Carbon, Journal of Nanoscience and Nanotechnology, International Journal of Nanomedicine, ePolymer, Journal of Composite Materials, Journals of Nanoparticle Research, Materials Chemistry and Physics, Materials Science and Technology, Macromolecular Engineering & Materials, Acta Mechanica, Computational Materials Science, Nanotechnology, Journal of Nanoscience and Nanotechnology, Journal of Applied Polymer Science, Journal of Materials Science, Smart Materials and Structures, Sensors and Actuators A, Measurement Science and Technology, ASME/IEEE Journal of Microelectromechanical Systems, IEEE Sensors Journal, Mechanics of Advanced Materials and Structures, Journal of Engineering Education, Nano Letters, and Nature Materials.
- Reviewed manuscript submitted to Encyclopedia of Biomaterials and Biomedical Engineering.
- Reviewed abstracts submitted to the 44th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference in Norfolk, VA, April 7-10, 2003
- Reviewed technical proposals submitted to: U.S. Civilian Research and Development Foundation (CRDF): 2004, 2008

UNIVERSITY/SCHOOL/DEPARTMENT SERVICE

- Appointed Interim Director, Department of Mechanical Engineering, April 2013
- Invited Lecture, *The Great Lecturers*, Stevens UG Student Life Fall 2015 Parents Weekend
- *Last Lecture: The Road I've Driven (So Far)*, invited by the Order of Omega at Stevens Institute of Technology, December 4, 2014
- Appointed to the Search Committee for Vice Provost of Academics, November 2012
- Elected to the Executive Committee of the Stevens Faculty Senate, December 2011
- Faculty representative, Strategic Planning Steering Committee and Chair of the Undergraduate Studies Enterprise Sub-committee, 2011-12.
- Appointed as an Affiliate Faculty Member of the Center for Innovation in Engineering and Science Education at Stevens, March 2012 – May 2013
- Faculty representative on Academic Colloquium held in conjunction with the Inauguration Ceremonies of Dr. Nariman Farvardin, the Seventh President of Stevens Institute of Technology, October 14, 2011
- Faculty representative, Presidential Search Committee, 2010
- Elected to the Institute-wide Faculty Position on the Stevens Board of Trustees Strategic Planning Committee (2010-11)
- Program Committee, interdisciplinary Science & Engineering Foundations for Education (SEFE) Program Graduate Certificate
- Senior Personnel, NSF Math-Science Partnerships (MSP) Program, *PISA²: Partnership to Improve Student Achievement in Physical Sciences: Integrating STEM Approaches*, 5 year, \$11.5M grant (Prof. Ed Whittaker, PEP, PI, with T. Herrington, R. Besser, and B. McGrath, CIESE)
- Faculty Mentor, Women's Softball Team (Fall 2012 – current)
- Co-Director, Nanotechnology Graduate Program (NGP) at Stevens (Spring 2007-Summer 2015)
- Two-hour lecture *Introduction to Nanotechnology* in support of the Stevens School of Systems & Enterprises – Lockheed Martin MS2 ELDP Program TDC Course *SYS/SDOE 667 Complex System Technologies and Application Domains*
- Member of Conference Committee, Stevens organizer/host, and Panelist, New Jersey Technology Council (NJTC) Nanotechnology Prototype Showcase, October 15 2008, held at Stevens Institute of Technology.
- The Laboratory for Multiscale Imaging (LMSI) Advisory Board (Spring 2008-current)
- Metro Area MEMS/NEMS Workshop Co-Coordinator, July 23, 2007
- Member, School of Engineering Dean search committee (Spring 2007)
- Faculty Working Group, Middle States Commission on Higher Education Evaluation Committee (AY 07-08)
- Stevens Faculty Committee on Academic Appeals (elected, 2006-08; elected chair Dec 2007)
- Tau Beta Pi Advisory Committee, Stevens chapter (Spring 2006 – current)
- Tau Beta Pi District 2 Spring Conference, Keynote Address, February 16-17, 2008, Stevens Institute of Technology, Hoboken, NJ

- Pi Tau Sigma faculty co-advisor (Spring 2006 – current); Faculty attendee, 2006 Pi Tau Sigma National Conference.

SYNERGISTIC EDUCATIONAL ACTIVITIES

- NSF IUUSE: FOUNDATIONS: Integrating Evidence-based Teaching and Learning into the Core Engineering Curriculum (co-PI), NSF DUE-1524656, 09/01/15 – 08/31/20, \$2,778,458.
- Steering Committee, NSF ADVANCE Stevens: Creating a Sustainable Culture that Facilitates Retention and Advancement of Women Faculty in STEM, NSF HRD-1311792, 09/15/13-08/31/18, \$549,978.
- Invited talk, 'Introduction to Engineering and Nanotechnology', keynote speaker for the Center for Initiatives in Jewish Education (CIJE) engineering project symposium, May 31, 2012.
- GK12: NJ Alliance for Engineering Education (NJAE) (co-PI), NSF DGE-0742462, 01/07/08 – 12/31/12, \$2,999,962.
- Senior Personnel and Member of the Executive Committee, NSF Math-Science Partnerships (MSP) Program, *PISA²: Partnership to Improve Student Achievement in Physical Sciences: Integrating STEM Approaches*, 5 year, \$11.5M grant (Prof. Ed Whittaker, PEP, PI, with T. Herrington, R. Besser, and B. McGrath, CIESE)
- NUE: Nanotechnology EXposure for Undergraduate Students (NANO-NEXUS) (co-PI), NSF EEC-1138244, 09/01/11 – 08/31/13, \$200,000.
- NUE: Virtual research experiences for undergraduates in nanotechnology (VREUN) (PI), NSF ESI-0532555, 9/01/05-08/31/07, \$200,000.
- Invited talk, 'Introduction to Nanotechnology', Center for Innovation in Engineering & Science Education 'Encouraging Students Toward STEM & IT Careers', workshop for New Jersey High School Guidance Counselors, March 23, 2010.
- Faculty participant, 17th Annual National Consortium for Specialized Secondary Schools of Mathematics, Science and Technology (NCSSSMST) Student Research Symposium, hosted at Stevens Institute of Technology, June 6-10, 2010.
- Faculty participant, GEAR-UP Summer Program for 7th graders (Summer 2006)
- Faculty participant, Exploring Career Options in Engineering & Science (ECOES) for high school students (Introduction to Nanotechnology: 2005, 2007-current; Mechanical Engineering Breakout Session: 2012)
- Collaborator, Center for Innovation in Engineering and Science Education (CIESE), Stevens
- Graduate coordinator of the Dean's Scholar Program for undergraduate engineering students at Northwestern University (Academic Year 2000).
- Project leader for the Illinois Science Olympiad, Nichols Middle School, Evanston, Illinois (1998, 1999).
- Participant in the Math and Science Enrichment Day at Dawes Elementary School, Evanston, Illinois (2003).