Stanford

Fu-Kuo Chang

Professor of Aeronautics and Astronautics

CONTACT INFORMATION

- **Administrator**

  Renee Quiroz - Administrative Associate

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Bio

BIO

Professor Chang's primary research interest is in the areas of multi-functional materials and intelligent structures with particular emphases on structural health monitoring, intelligent self-sensing diagnostics, and multifunctional energy storage composites for transportation vehicles as well as safety-critical assets and medical devices. His specialties include embedded sensors and stretchable sensor networks with built-in self-diagnostics, integrated diagnostics and prognostics, damage tolerance and failure analysis for composite materials, and advanced multi-physics computational methods for multi-functional structures. Most of his work involves system integration and multi-disciplinary engineering in structural mechanics, electrical engineering, signal processing, and multi-scale fabrication of materials. His recent research topics include: Multifunctional energy storage composites, Integrated health management for aircraft structures, bio-inspired intelligent sensory materials for fly-by-feel autonomous vehicles, active sensing diagnostics for composite structures, self-diagnostics for high-temperature materials, etc.

ACADEMIC APPOINTMENTS

- Professor, Aeronautics and Astronautics
- Member, Bio-X

HONORS AND AWARDS

- Life-Time Achievement Award, Society of Prognostic Health Management (2018)
- Life-Time Achievement Award, SPIE NDE/SHM (2010)
- Structural Health Monitoring (SHM) Lifetime Achievement Award, International Workshop on Structural Health Monitoring (2004)
- Fellow, American Institute of Aeronautics and Astronautics (AIAA) (2001)
- Fellow, American Society of Mechanical Engineers (ASME) (1998)
- Presidential Young Investigator Award, National Science Foundation (1988)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Co-founder and chair, Aerospace Industry Steering Committee on Structural Health Monitoring (AISC-SHM) (2006 - 2008)
- member, US Army Research Laboratories Advisory Board (2014 - 2017)

- Chair and organizer, International Workshop on Structural Health Monitoring (1997 - present)
- Editor-in-Chief, Int. J. of Structural Health Monitoring (2012 - present)
- Associate Editor, AIAA Journal (2024 - present)

PROFESSIONAL EDUCATION

- PhD, Michigan (1983)

LINKS

- Structures and Composites (SACL) laboratory: https://sacld8.sites.stanford.edu/

Teaching

COURSES

2025-26

- Analysis of Structures: AA 240 (Win)
- Mechanics of Composites: AA 256 (Aut)
- Structural Health Monitoring: AA 257 (Spr)

2024-25

- Analysis of Structures: AA 240 (Win)
- Mechanics of Composites: AA 256 (Aut)
- Structural Health Monitoring: AA 257 (Spr)

2023-24

- Analysis of Structures: AA 240 (Win)
- Mechanics of Composites: AA 256 (Aut)
- Structural Health Monitoring: AA 257 (Spr)

2022-23

- Analysis of Structures: AA 240 (Win)
- Mechanics of Composites: AA 256 (Aut)
- Structural Health Monitoring: AA 257 (Spr)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Tanay Topac

Doctoral Dissertation Advisor (AC)

Enquan Chew, Jerry Liu

Master's Program Advisor

Ben Gietzen, Jason Gunn, Rachel Ye, Martin Zhou

Doctoral (Program)

Ilya Avros

Publications

PUBLICATIONS

- **Roadmap: Integrating artificial intelligence in structural health monitoring systems** *MEASUREMENT SCIENCE AND TECHNOLOGY*
  Laflamme, S., Blasch, E., Ubertini, F., Liu, Z., Wertz, J., Knott, C., Cherry, M., Lindgren, E., Chang, F., Kumar, A., Poole, J., Worden, K., Downey, et al
  2026; 37 (10)

- **Super-Turing synaptic resistor circuits for intelligent morphing wing.** *Communications engineering*
  Deo, A., Lee, J., Gao, D., Shenoy, R., Haughn, K. P., Rong, Z., Hei, Y., Qiao, D., Topac, T., Chang, F. K., Inman, D. J., Chen, Y.
  2025; 4 (1): 109

- **Autoregressive model-based parameter correlation for state of charge and state of health of lithium-ion batteries using built-in piezoelectric transducer induced ultrasonic waves** *JOURNAL OF ENERGY STORAGE*
  Ahmed, S., Farhangdoust, S., Chang, F.
  2025; 114

- **Thermo-mechanical properties of shape-recoverable structural composites via vacuum-assisted resin transfer molding process and in-situ polymerization of poly (tert-butyl acrylate-co-acrylic acid) copolymer** *COMPOSITES PART A-APPLIED SCIENCE AND MANUFACTURING*
  Jeon, J., So, B., Choi, Y., Han, Y., Kim, T., Shin, G., Lee, J., Kim, H., Kim, J., Farhangdoust, S., Chang, F., Kim, M., Lee, et al
  2024; 185

- **Design and Manufacture of Multifunctional 3-D Smart Skins with Embedded Sensor Networks for Robotic Applications.** *Sensors (Basel, Switzerland)*
  Ransom, E., Chen, X., Mangram, W., Nasrollahi, A., Topac, T., Chang, F. K.
  2024; 24 (11)

- **GUIDED-WAVE STRUCTURAL HEALTH MONITORING FOR ASSESSING THE BOND STRENGTH OF INDUCTION-WELDED THERMOPLASTIC COMPOSITE JOINTS**
  Mazzeschi, M., Farhangdoust, S., Ahmed, S., Cariibano, E., Fernandez, M., Chang, F., AMER SOC MECHANICAL ENGINEERS
  AMER SOC MECHANICAL ENGINEERS.2024

- **Fly-by-Feel: Learning Aerodynamics from Multimodal Wing Mechanics**
  Topac, T., Gray, C., Chang, F., AIAA
  AMER INST AERONAUTICS & ASTRONAUTICS.2024

- **Design of Active Sensing Smart Skin for Incipient Slip Detection in Robotics Applications** *IEEE-ASME TRANSACTIONS ON MECHATRONICS*
  Liu, C., Huh, T., Chen, S. X., Lu, L., Kopsaftopoulos, F., Cutkosky, M. R., Chang, F.
  2022

- **Enabling self-shape estimation of composite structures using distributed microfabricated strain gauge networks** *JOURNAL OF COMPOSITE MATERIALS*
  Chen, X., Nasrollahi, A., Ransom, E., Topac, T., Chang, F.
  2022

- **Si-based self-programming neuromorphic integrated circuits for intelligent morphing wings** *JOURNAL OF COMPOSITE MATERIALS*
  Nathan, D., Deo, A., Haughn, K., Yi, S., Lee, J., Gao, D., Shenoy, R., Xu, M., Tran, I. C., Zheng, J., Rong, Z., Wang, M., Shaffer, et al
  2022

- **Hybrid Models for Situational Awareness of an Aerial Vehicle from Multimodal Sensing** *AIAA JOURNAL*
  Topac, O., Ha, S., Chen, X., Gamble, L., Inman, D., Chang, F.
  2022

- **Warped Gaussian processes for predicting the degradation of aerospace structures** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
  Pfingstl, S., Braun, C., Nasrollahi, A., Chang, F., Zimmermann, M.
  2022

- **A systematic approach to resolve high impedance of multifunctional energy storage composites** *JOURNAL OF ENERGY STORAGE*
  Bombik, A., Ha, S., Nasrollahi, A., Chang, F.
  2022; 54
- **Design of a Robust Tool for Deploying Large-Area Stretchable Sensor Networks from Microscale to Macroscale.** *Sensors (Basel, Switzerland)*
  Ransom, E., Chen, X., Chang, F.
  2022; 22 (13)
- **Numerical and experimental evaluation of mechanical performance of the multifunctional energy storage composites** *JOURNAL OF COMPOSITE MATERIALS*
  Wang, Y., Chang, F.
  2021
- **Kirigami auxetic structure for high efficiency power harvesting in self-powered and wireless structural health monitoring systems** *SMART MATERIALS AND STRUCTURES*
  Farhangdoust, S., Georgeson, G., Ihn, J., Chang, F.
  2021; 30 (1)
- **MECHANICAL-ELECTRICAL BEHAVIOR OF MULTIFUNCTIONAL ENERGY STORAGE COMPOSITES**
  Bombik, A., Ha, S., Nasrollahi, A., Haider, M., Chang, F., Amer Soc Mech Engineers
  AMER SOC MECHANICAL ENGINEERS.2021
- **Li-ion Battery Health Estimation Using Ultrasonic Guided Wave Data and an Extended Kalman Filter**
  Bombik, A., Ha, S., Haider, M., Nasrollahi, A., Chang, F., IEEE
  IEEE.2021: 962-966
- **Reliability of crack quantification via acousto-ultrasound active-sensing structural health monitoring using surface-mounted PZT actuators/sensors** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
  Yadav, S., Mishra, S., Kopsaftopoulos, F., Chang, F.
  2020
- **Design and Integration of a Wireless Stretchable Multimodal Sensor Network in a Composite Wing.** *Sensors (Basel, Switzerland)*
  Chen, X., Maxwell, L., Li, F., Kumar, A., Ransom, E., Topac, T., Lee, S., Faisal Haider, M., Dardona, S., Chang, F.
  2020; 20 (9)
- **Static Tactile Sensing for a Robotic Electronic Skin via an Electromechanical Impedance-Based Approach.** *Sensors (Basel, Switzerland)*
  Liu, C. n., Zhuang, Y. n., Nasrollahi, A. n., Lu, L. n., Haider, M. F., Chang, F. K.
  2020; 20 (10)
- **Multifunctional energy storage composite structures with embedded lithium-ion batteries** *JOURNAL OF POWER SOURCES*
  Ladpli, P., Nardari, R., Kopsaftopoulos, F., Chang, F.
  2019; 414: 517–29
- **A Self-Adaptive 1D Convolutional Neural Network for Flight-State Identification.** *Sensors (Basel, Switzerland)*
  Chen, X., Kopsaftopoulos, F., Wu, Q., Ren, H., Chang, F.
  2019; 19 (2)
- **A Self-Adaptive 1D Convolutional Neural Network for Flight-State Identification** *SENSORS*
  Chen, X., Kopsaftopoulos, F., Wu, Q., Ren, H., Chang, F.
  2019; 19 (2)
- **Active Sensing for Measuring Contact of Thin Film Gecko-Inspired Adhesives** *IEEE ROBOTICS AND AUTOMATION LETTERS*
  Tae Myung Huh, Liu, C., Hashizume, J., Chen, T. G., Suresh, S. A., Chang, F., Cutkosky, M. R.
  2018; 3 (4): 3263–70
- **Characterization of Distributed Microfabricated Strain Gauges on Stretchable Sensor Networks for Structural Applications** *SENSORS*
  Chen, X., Topac, T., Smith, W., Ladpli, P., Liu, C., Chang, F.
  2018; 18 (10)

- **Characterization of Distributed Microfabricated Strain Gauges on Stretchable Sensor Networks for Structural Applications.** *Sensors (Basel, Switzerland)*
  Chen, X., Topac, T., Smith, W., Ladpli, P., Liu, C., Chang, F.
  2018; 18 (10)
- **Integrity monitoring of adhesively bonded joints via an electromechanical impedance-based approach** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
  Zhuang, Y., Kopsaftopoulos, F., Dugnani, R., Chang, F.
  2018; 17 (5): 1031–45
- **Functionalization of stretchable networks with sensors and switches for composite materials** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
  Guo, Z., Kim, K., Salowitz, N., Lanzara, G., Wang, Y., Peumans, P., Chang, F.
  2018; 17 (3): 598–623
- **Flight State Identification of a Self-Sensing Wing via an Improved Feature Selection Method and Machine Learning Approaches** *SENSORS*
  Chen, X., Kopsaftopoulos, F., Wu, Q., Ren, H., Chang, F.
  2018; 18 (5)
- **Estimating state of charge and health of lithium-ion batteries with guided waves using built-in piezoelectric sensors/actuators** *JOURNAL OF POWER SOURCES*
  Ladpli, P., Kopsaftopoulos, F., Chang, F.
  2018; 384: 342–54
- **Flight State Identification of a Self-Sensing Wing via an Improved Feature Selection Method and Machine Learning Approaches.** *Sensors (Basel, Switzerland)*
  Chen, X., Kopsaftopoulos, F., Wu, Q., Ren, H., Chang, F.
  2018; 18 (5)
- **Estimating Lithium-ion Battery State of Charge and Health with Ultrasonic Guided Waves Using an Efficient Matching Pursuit Technique**
  Ladpli, P., Liu, C., Kopsaftopoulos, F., Chang, F., IEEE
  IEEE.2018
- **A stochastic global identification framework for aerospace structures operating under varying flight states** *MECHANICAL SYSTEMS AND SIGNAL PROCESSING*
  Kopsaftopoulos, F., Nardari, R., Li, Y., Chang, F.
  2018; 98: 425-447
- **Design and analysis of radially polarized screen-printed piezoelectric transducers** *JOURNAL OF INTELLIGENT MATERIAL SYSTEMS AND STRUCTURES*
  Salowitz, N. P., Kim, S., Kopsaftopoulos, F., Li, Y., Chang, F.
  2017; 28 (7): 934-946
- **Analytical model of lap-joint adhesive with embedded piezoelectric transducer for weak bond detection** *JOURNAL OF INTELLIGENT MATERIAL SYSTEMS AND STRUCTURES*
  Dugnani, R., Chang, F.
  2017; 28 (1): 124-140
- **Battery charge and health state monitoring via ultrasonic guided-wave-based methods using built-in piezoelectric transducers**
  Ladpli, P., Kopsaftopoulos, F., Nardari, R., Chang, F.
  edited by Meyendorf, N. G.
  SPIE-INT SOC OPTICAL ENGINEERING.2017
- **Stand-Alone Stretchable Absolute Pressure Sensing System for Industrial Applications** *IEEE Transactions on Industrial Electronics*
  Guo, Y., Schütz, S., Vaghi, A., Li, Y., Guo, Z., Chang, F., Barrettino, D., Wang, S. X.
  2017; 64 (11): 8739-8746
- **Adhesive bond-line degradation detection via a cross-correlation electromechanical impedance-based approach** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
  Dugnani, R., Zhuang, Y., Kopsaftopoulos, F., Chang, F.

2016; 15 (6): 650-667

- **A Super Stretchable Organic Thin-Film Diodes Network That Can Be Embedded Into Carbon Fiber Composite Materials for Sensor Network Applications** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*
  Guo, Z., Aboudi, U., Peumans, P., Howe, R. T., Chang, F.
  2016; 25 (3): 524-532
- **Monitoring fatigue-induced transverse matrix cracks in laminated composites using built-in acousto-ultrasonic techniques** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
  Wilson, C. L., Chang, F. K.
  2016; 15 (3): 335-350
- **Damage detection sensitivity characterization of acousto-ultrasound-based structural health monitoring techniques** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
  Janapati, V., Kopsaftopoulos, F., Li, F., Lee, S. J., Chang, F.
  2016; 15 (2): 143-161
- **Bio-Inspired Stretchable Absolute Pressure Sensor Network.** *Sensors*
  Guo, Y., Li, Y., Guo, Z., Kim, K., Chang, F., Wang, S. X.
  2016; 16 (1)
- **A Self-Diagnostic Adhesive for Monitoring Bonded Joints in Aerospace Structures**
  Zhuang, Y., Li, Y., Kopsaftopoulos, F., Chang, F.
  edited by Lynch, J. P.
  SPIE-INT SOC OPTICAL ENGINEERING.2016
- **MULTIFUNCTIONAL ENERGY STORAGE COMPOSITES DESIGN, FABRICATION, AND EXPERIMENTAL CHARACTERIZATION**
  Ladpli, P., Nardari, R., Rewari, R., Liu, H., Slater, M., Kepler, K., Wang, Y., Kopsaftopoulos, F., Chang, F., ASME
  AMER SOC MECHANICAL ENGINEERS.2016
- **Stochastic Global Identification of a Bio-inspired Self-sensing Composite UAV Wing viaWindTunnel Experiments**
  Kopsaftopoulos, F., Nardari, R., Li, Y., Wang, P., Chang, F.
  edited by Kundu, T.
  SPIE-INT SOC OPTICAL ENGINEERING.2016
- **Electromagnetic Navigation Linear Displacement Transducer Based on Magnetic Field Gradient Technique** *IEEE TRANSACTIONS ON MAGNETICS*
  Zhang, M., Or, S. W., Wang, S., Chang, F.
  2015; 51 (11)
- **Load monitoring and compensation strategies for guided-waves based structural health monitoring using piezoelectric transducers** *JOURNAL OF SOUND AND VIBRATION*
  Roy, S., Ladpli, P., Chang, F.
  2015; 351: 206-220
- **Ultrasonic guided wave active sensing for monitoring of split failures in reinforced concrete** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
  Wu, F., Chan, H., Chang, F.
  2015; 14 (5): 439-448
- **Linearly dispersive signal construction of Lamb waves with measured relative wavenumber curves** *SENSORS AND ACTUATORS A-PHYSICAL*
  Cai, J., Yuan, S., Qing, X. P., Chang, F., Shi, L., Qiu, L.
  2015; 221: 41-52
- **STATE-SENSING AND AWARENESS FOR A BIO-INSPIRED INTELLIGENT COMPOSITE UAV WING**
  Kopsaftopoulos, F., Nardari, R., Li, Y., Wang, P., Chang, F.
  edited by Thomsen, O. T., Berggreen, C., Sorensen, B. F.
  AALBORG UNIV PRESS.2015
- **Design of intelligent composites with life-cycle health management capabilities**

Rosania, C. L., Larrosa, C. C., Chang, F.
edited by Kundu, T.
SPIE-INT SOC OPTICAL ENGINEERING.2015

- **Bondline Integrity Monitoring of Adhesively Bonded Structures via an Electromechanical Impedance Based Approach**
Zhuang, Y., Kopsaftopoulos, F., Chang, F.
edited by Chang, F. K., Kopsaftopoulos, F.
DESTECH PUBLICATIONS, INC.2015: 187-197

- **Experimental Identification of Structural Dynamics and Aeroelastic Properties of a Self-sensing Smart Composite Wing**
Kopsaftopoulos, F., Nardari, R., Li, Y., Wang, P., Ye, B., Chang, F.
edited by Chang, F. K., Kopsaftopoulos, F.
DESTECH PUBLICATIONS, INC.2015: 1299-1311

- **Multifunctional Energy Storage Composites for SHM Distrubuted Sensor Networks**
Ladpli, P., Nardari, R., Wang, Y., Hernandez-Gallegos, P., Rewari, R., Kuo, H., Kopsaftopoulos, F., Kepler, K. D., Lopez, H. A., Chang, F.
edited by Chang, F. K., Kopsaftopoulos, F.
DESTECH PUBLICATIONS, INC.2015: 2217-2226

- **Decision Making for Reference-Free Damage Detection**
Hajrya, R., Kopsaftopoulos, F., Roy, S., Ladpli, P., Chang, F.
edited by Chang, F. K., Kopsaftopoulos, F.
DESTECH PUBLICATIONS, INC.2015: 2964-2971

- **On-line updating Gaussian mixture model for aircraft wing spar damage evaluation under time-varying boundary condition** *SMART MATERIALS AND STRUCTURES*
Qiu, L., Yuan, S., Chang, F., Bao, Q., Mei, H.
2014; 23 (12)

- **Recent advancements and vision toward stretchable bio-inspired networks for intelligent structures** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
Salowitz, N., Guo, Z., Roy, S., Nardari, R., Li, Y., Kim, S., Kopsaftopoulos, F., Chang, F.
2014; 13 (6): 609-620

- **Trends on research in structural health monitoring** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
Guemes, A., Salowitz, N., Chang, F.
2014; 13 (6): 579-580

- **Microfabricated Expandable Sensor Networks for Intelligent Sensing Materials** *IEEE SENSORS JOURNAL*
Salowitz, N. P., Guo, Z., Kim, S., Li, Y., Lanzara, G., Chang, F.
2014; 14 (7): 2138-2144

- **A novel physics-based temperature compensation model for structural health monitoring using ultrasonic guided waves** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
Roy, S., Lonkar, K., Janapati, V., Chang, F.
2014; 13 (3): 321-342

- **In situ damage classification for composite laminates using Gaussian discriminant analysis** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
Larrosa, C., Lonkar, K., Chang, F.
2014; 13 (2): 190-204

- **Modeling of piezo-induced ultrasonic wave propagation in composite structures using layered solid spectral element** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
Lonkar, K., Chang, F.
2014; 13 (1): 50-67

- **Bio-inspired stretchable network-based intelligent composites** *JOURNAL OF COMPOSITE MATERIALS*
Salowitz, N., Guo, Z., Li, Y., Kim, K., Lanzara, G., Chang, F.
2013; 47 (1): 97-105

- **Development of SEM-Based PESEA Code for Modeling PZT Induced Acousto-Ultrasonic Waves Propagating in Metallic and Composite Structures**
  Lonkar, K., Chang, F.
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  DESTECH PUBLICATIONS, INC.2013: 2512-2520
- **Screen Printed Piezoceramic Actuators/Sensors Microfabricated on Organic Films and Stretchable Networks**
  Salowitz, N., Guo, Z., Kim, S., Li, Y., Lanzara, G., Chang, F.
  edited by Chang, F. K.
  DESTECH PUBLICATIONS, INC.2013: 1543-1550
- **Monitoring Transverse Matrix Cracking in Composite Laminates Using Ultrasonic Guided Waves**
  Larrosa, C., Chang, F.
  edited by Chang, F. K.
  DESTECH PUBLICATIONS, INC.2013: 1795-1804
- **Sensor Network Configuration Effect on Detection Sensitivity of an Acousto-Ultrasound-Based Active SHM System**
  Janapati, V., Kopsaftopoulos, F., Roy, S., Mueller, I., Lee, S. J., Ladpli, P., Chang, F.
  edited by Chang, F. K.
  DESTECH PUBLICATIONS, INC.2013: 2147-+
- **Structural Damage Detection Using Ultrasonic Guided Waves Under Varying Ambient Temperature and Loading Environments** *9th International Workshop on Structural Health Monitoring (IWSHM)*
  Roy, S., Ladpli, P., Lonkar, K., Chang, F.
  DESTECH PUBLICATIONS, INC.2013: 1284–1293
- **Bio-Inspired Smart Skin Based on Expandable Network** *8th International Workshop on Structural Health Monitoring*
  Guo, Z., Kim, K., Lanzara, G., Salowitz, N., Peumans, P., Chang, F.
  DESTECH PUBLICATIONS, INC.2013: 1717–1723
- **On the Performance Quantification of Active Sensing SHM Systems Using Model-Assisted POD Methods** *8th International Workshop on Structural Health Monitoring*
  Mueller, I., JANAPATI, V., Banerjee, S., Lonkar, K., Roy, S., Chang, F.
  DESTECH PUBLICATIONS, INC.2013: 2417–2428
- **A Vision on Stretchable Bio-Inspired Networks for Intelligent Structures** *9th International Workshop on Structural Health Monitoring (IWSHM)*
  Salowitz, N., Guo, Z., Roy, S., Nardari, R., Li, Y., Kim, S., Kopsaftopoulos, F., Chang, F.
  DESTECH PUBLICATIONS, INC.2013: 35–44
- **Sensor Network Configuration Effect on Detection Sensitivity of an Acousto-Ultrasound-based Active SHM System**
  Janapati, V., Kopsaftopoulos, F., Roy, S., Mueller, I., Lee, S., J., Ladpli, P., Chang, F.
  2013
- **Development of High Performance BS-PT Based Piezoelectric Transducer for Structural Health Monitoring of High-Temperature Polymer-Matrix Composite Structures**
  Li, Y. -H., Kim, S. -J., Nardari, R., Oropeza, D., Chang, F. -K
  2013
- **Screen Printed Piezoceramic Actuators/Sensors Microfabricated on Organic Films and Stretchable Networks**
  Salowitz, N., Guo, Z., Kim, S. -J., Li, Y. -H, Lanzara, G., Chang, F. -K
  2013
- **Monitoring Transverse Matrix Cracking in Composite Laminates Using Ultrasonic Guided Waves**
  Larrosa, C., Chang, F. -K
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- **Structural damage detection using ultrasonic guided waves under varying ambient temperature and loading environments**
  Roy, S., Ladpli, P., Lonkar, P., Chang, F. -K
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- **A vision on stretchable bio-inspired networks for intelligent structures**
  Salowitz, N., Guo, Z., Roy, S., Nardari, R., Li, Y. -H, Kopsaftopoulos, F., Chang, F.
  2013
- **A structural health monitoring fastener for tracking fatigue crack growth in bolted metallic joints** *STRUCTURAL HEALTH MONITORING-AN INTERNATIONAL JOURNAL*
  Rakow, A., Chang, F.
  2012; 11 (3): 253-267
- **Bio-inspired intelligent sensing materials for fly-by-feel autonomous vehicles** *11th IEEE Sensors Conference*
  Salowitz, N., Guo, Z., Kim, S., Li, Y., Lanzara, G., Chang, F.
  IEEE.2012: 363–365
- **Real-time prediction of impact-induced damage for composite structures based on failure analysis and efficient database methods**
  Roy, S., Mueller, I., Janapati, V., Das, S., Chang, F. -K
  2012
- **A Model-assisted Integrated Diagnostics for Structural Health Monitoring**
  Lonkar, K., Janapati, V., Roy, S., Chang, F. -K
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  Salowitz, N., Guo, Z., Kim, S., J., Li, Y. -H, Lanzara, G., Chang, F. -K
  2012
- **Real time in-situ damage classification, quantification and diagnosis for composite structures**
  Larrosa, C., Chang, F. -K
  2012
- **Strain/Elongation Sensitive Metal-Coated Polyimide Microwires for Micro-Scaled Highly Expandable Sensor Networks**
  Lanzara, G., Guo, Z., Salowitz, N., Chang, F. -K
  2012
- **Design of Optimal Layout of Active Sensing Diagnostic Network for Achieving Highest Damage Detection Capability in Structures**
  Janapati, V., Lonkar, K., Chang, F., K.
  2012
- **STRUCTURAL HEALTH MONITORING OF HIGH TEMPERATURE COMPOSITES** *ASME International Mechanical Engineering Congress and Exposition (IMECE)*
  Salowitz, N., Li, Y., Kim, S., Roy, S., Chang, F.
  AMER SOC MECHANICAL ENGINEERS.2012: 273–280
- **Real-time prediction of impact-induced damage for composite structures based on failure analysis and efficient database methods** *Conference on Health Monitoring of Structural and Biological Systems*
  Roy, S., Mueller, I., Janapati, V., Das, S., Chang, F.
  SPIE-INT SOC OPTICAL ENGINEERING.2012
- **A dynamic crash model for energy absorption in braided composite materials - Part II: Implementation and verification** *JOURNAL OF COMPOSITE MATERIALS*
  Flesher, N. D., Chang, F., Janapala, N. R., Starbuck, J. M.
  2011; 45 (8): 867-882
- **A dynamic crash model for energy absorption in braided composite materials. Part I: Viscoplastic material model** *JOURNAL OF COMPOSITE MATERIALS*
  Flesher, N. D., Chang, F., Janapala, N. R.
  2011; 45 (8): 853-865
- **Bio-Inspired Smart Skin Based on Expandable Network**
  Guo, Z., Kim, K., Lanzara, G., Salowitz, N., Peumans, P., Chang, F. -K
  2011

- **A Robust Impact Force Determination Technique for Complex Structures**
  Mueller, I., Vonnieda, K., Das, S., Chang, F. -K
  2011
- **Accelerated aging experiments for prognostics of damage growth in composite materials**
  Saxena, A., Goebel, K., Larrosa, C., Janapati, V., Roy, S., Chang, F. -K
  2011
- **Development of a bio-inspired stretchable network for intelligent composites**
  Salowitz, N., Guo, Z., Li, Y. -H, Kim, K., Lanzara, G., Chen, Y., Chang, F.
  2011
- **On the Performance Quantification of Active Sensing SHM Systems using Model-assisted POD Methods**
  Mueller, I., Janapati, V., Banerjee, S., Lonkar, K., Roy, S., Chang, F. -K
  2011
- **Characterization of temperature, load and damage effects using piezo-electric transducer patches based on fuzzy clustering**
  Lopes, V., Gonsalez, C., da Silva, S., Roy, S., Kode, K., Sunor, F., Chang, F.
  2011
- **Development of SEM-based PESEA Code for Modeling PZT Induced Acousto-ultrasonic Waves Propagating in Metallic & Composite Structures**
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