Shuaifeng (Scott) Li

William E. Boeing Department of Aeronautics and Astronautics
105 Guggenheim Hall, University of Washington, Seattle, WA 98195
Email: sflee@uw.edu

EDUCATION

University of Washington (UW), Seattle, WA, USA
Ph.D., Aeronautics & Astronautics 09/2018-Present
Huazhong University of Science and Technology (HUST), Wuhan, Hubei, China
B.S., Materials Science and Engineering 09/2013-06/2017

RESEARCH EXPERIENCE

- **Laboratory for Engineered Materials and Structures (LEMS), UW** 09/2018-Present
  Research Assistant (Adviser: Prof. Jinkyu Yang)
  Synthetic Corals
  Corals reefs are severely threatened by human impacts at local and global scales, resulting in rapid recent declines and dire predictions for future persistence. This NSF project is a data-driven multidisciplinary project, aiming to enhance the biological understanding of the holobiont, create new living materials and develop an integrated platform to fuse biology and materials science.
  - 3D-printed bio-scaffolds to manipulate coral growth
  - Used observation techniques to measure how corals grow

  Valley Anisotropy in Elastic Metamaterials (Partially done in HUST)
  - Proposed a bio-inspired structure to achieve the anisotropic elastic valley metamaterial
  - Revealed the anisotropic topology properties by Berry curvature analysis
  - Achieved the tunable Berry curvature
  - Demonstrated the unprecedented wave propagation in elastic valley topological insulators
- **Laboratory for Soft Intelligent Materials and Devices, HUST** 03/2015-08/2018
  Research Assistant (Adviser: Prof. Jianfeng Zang)
  Soft Elastic Topological Insulators
  - Built a type of elastic topological insulator using continuum medium (soft materials)
  - Proposed a method to achieve reversible on-demand topological phase using mechanical deformation
  - Demonstrated dynamically tunable topological states using mechanical deformation
  - Designed and built an experimental platform for elastic waves measurement

  Soft Acoustic/Elastic Switch/Filter
  - Explored the potentials of soft materials in acoustic/elastic metamaterials
  - Demonstrated independently tunable longitudinal and transverse wave band gap by stretching or compressing soft materials
  - Instructed a senior student to accomplish graduation thesis
- **Laboratory for Advanced Materials Design, HUST** 09/2015-11/2015
  Undergraduate Student (Adviser: Prof. Bin Shan, Prof. Yanwei Wen)
  Dynamics of Water Uptake by Carbon Nanotubes
  - Discovered the capillary phenomenon in nanoscale using Lammps molecular simulation
  - Explained the differences between macroscale and nanoscale capillaries

JOURNAL PUBLICATIONS

Published or In Review

[1] **S.Li**, I.Kim, S.Iwamoto, J.Zang and J.Yang, Valley anisotropy in elastic metamaterials. *Phys. Rev. B* **100**, 195102

[2] H.Tang, Z.Chen, N.Tang, **S.Li**, Y.Shen, Y.Peng, X.Zhu, J.Zang, Hollow-out patterning ultrathin acoustic metasurfaces for multi-functionalities using soft fiber/rigid bead network. *Adv. Funct. Mater.* **28,** 1801127 (Selected as Inside Front Cover)

[3] **S.Li**, D.Zhao, H.Niu, X.Zhu, J.Zang, Observation of elastic topological states in soft materials. *Nat. Commun.* **9,** 1370

[4] Z.Huang, **S.Li**, X.Liu, D.Zhao, L.Ye, X.Zhu, J.Zang, Dynamically tunable interface states in 1D graphene-embedded photonic crystal heterostructure. *J. Phys.: Condens. Matter.* **30,** 095702

Submitted or In Preparation

[1] H.Niu*, **S.Li***, J.Zang, Tunable elastic interface states in hexagonal boron nitride structure inspired soft metamaterials. (In Preparation) *The first two authors contributed equally

CONFERENCE PRESENTATIONS

†Presenter

[1] *Synthetic Topological Matter International Workshop*, Vancouver, British Columbia, Canada, Feb.18-Feb.20, 2019.

[2] J.Zang†, **S.Li**, Dynamically Tunable Topological States in Soft Elastic Metamaterials. *Materials Research Society (MRS)*, Boston, Massachusetts, Nov.25-Nov.30, 2018.

[3] J.Zang†, X.Liu, **S.Li**, X.Zhu, Soft Material Enables Striking New Photonic and Phononic Properties. *Materials Research Society (MRS)*, Boston, Massachusetts, Nov.25-Nov.30, 2017.

[4] **S.Li**†, D.Zhao, H.Niu, X.Zhu, J.Zang, Observation of elastic topological states in soft materials. *The 8th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META'17)*, Incheon, South Korea, Jul.25-Jul.28, 2017.

[5] **S.Li**†, D.Zhao, H.Niu, X.Zhu, J.Zang, Topological transition in soft elastic metamaterials. *The 3rd International Symposium of Flexible and Stretchable Electronics (ISFSE2017)*, Wuhan, China, Jun.29-Jun.30, 2017.

[6] *Second IOP Publishing Young Researchers' Meeting: Frontiers in Fundamental and Applied Physics*, Beijing, China, Nov.4-Nov.5, 2016.

JOURNAL REVIEW

New Journal of Physics
Physical Review B
Advanced Materials

TEACHING EXPERIENCE

Teaching Assistant

- AE 552 Aerospace Composite Design — Spring, 2019
- AE 550 Mechanics of Composite Materials — Winter, 2019
- AA 532 Mechanics of Composite Materials — Autumn, 2018

Mentorship

- Isaiah Cuadras (Undergraduate student, Aerospace Engineering)

AWARDS AND HONORS

- Ruth C. Hertzberg Endowed Fellowship *Sept. 2018*
- Best Poster Award in the 8th International Conference on Metamaterials, Photonic Crystals and Plasmonics (META'17), Incheon, South Korea *Jul. 2017*
- Outstanding Undergraduate *Jun. 2017*
- Social Scholarship Sponsored by Pacific Precision Forging Co., Ltd. *2015 & 2016*
- Innovation Scholarship by School of Materials Science and Engineering *2015 & 2016*
- National Endeavor Scholarship *2014 & 2016*
- Third Prize of the 16th 3D Modeling Competition in HUST *Dec. 2015*
- Research Funding from HUST *Nov. 2015*

SKILLS

Programming & Software: C++, Matlab, Python, Comsol, AutoCAD, Rhino, Cinema 4D
Facility experience: Universal Mechanical Tester, Brüel & Kjær Pulse, Shaker, Accelerometer, Laser Doppler Vibrometer, Laser Cutter, 3D Printer, Chemical Synthesis