

**SUNG HOON KANG**  
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## **EDUCATION**

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**Harvard University** Cambridge, MA  
Ph.D., Applied Physics, School of Engineering and Applied Sciences May 2012  
Thesis: Self-Organization of Bioinspired Fibrous Surfaces  
Advisor: Prof. Joanna Aizenberg

**Massachusetts Institute of Technology** Cambridge, MA  
S.M., Materials Science and Engineering 2004  
Thesis: Evaporative Printing of Organic Materials & Metals and Development of Organic Memories  
Advisor: Prof. Vladimir Bulović

**Seoul National University** Seoul, Korea  
B.S., *summa cum laude*, Materials Science and Engineering 2000

## **PROFESSIONAL EXPERIENCE**

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**Johns Hopkins University** Baltimore, MD  
Assistant Professor, Dept. of Mechanical Engineering/Hopkins Extreme Materials Institute January 2015-present

**Harvard University** Cambridge, MA  
Postdoctoral Fellow (Advisor: Prof. Katia Bertoldi) June 2012-December 2014

**Harvard University** Cambridge, MA  
Doctoral Researcher (Advisor: Prof. Joanna Aizenberg) 2008-May 2012

**EIC Laboratories, Inc.** Norwood, MA  
Staff Scientist (Supervisor: Dr. Krishna C. Mandal) 2004-2007

**Massachusetts Institute of Technology** Cambridge, MA  
Graduate Research Assistant (Advisor: Prof. Vladimir Bulović) 2001-2004

## **AWARDS AND HONORS**

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2021 Air Force Summary Faculty Fellowship 2021

2020 Air Force Summary Faculty Fellowship 2020

Johns Hopkins University Catalyst Award 2020  
- \$75,000 support for a promising research and creative endeavors of an early career faculty with the goal of launching them on a path to a sustainable and rewarding academic career

Alumnus, China-America Frontiers of Engineering, National Academy of Engineering 2019  
- one of seven US engineers representing new materials area

Johns Hopkins University Whiting School of Engineering Research Lab Excellence Award 2019  
- one in engineering school annually

FY 2018 Air Force Office of Scientific Research Young Investigator Program Award	2017
Alumnus, Frontiers of Engineering, National Academy of Engineering <i>- the total number of 100 engineers, generally 30-45 year olds, from industry, universities, and government labs attended to represent the full range of research in various engineering fields</i>	2016
NSF Fellowship for Summer Institute on Additive Manufacturing (Evanston, IL)	2013
Early Career Development Workshop Fellowship, Korean-American Scientists and Engineers Association	2013
Poster Award, Growth and Form: Pattern Formation in Biology, Aspen Center for Physics	2012
Graduate Student Award Gold Medal, Materials Research Society Fall Meeting	2011
Second Place Poster Award NSF Workshop and Freund Symposium on Future Directions of Mechanics Research (Providence, RI)	2011

### **MENTEE AWARDS AND HONORS**

Christopher Shallal (undergraduate student) National Science Foundation Graduate Research Fellowship MIT Presidential Fellow	2021
Adebayo Eisape (PhD student) Microsoft PhD Fellowship	2021
Mostafa Omar (PhD student) Creel Family Teaching Assistant Award	2021
Adebayo Eisape (PhD student) 2 <sup>nd</sup> Place Award in National Inventors Hall of Fame Collegiate Inventors Competition	2020
Christopher Shallal (undergraduate student) Clinton Foundation Covid-19 Student Action Fund	2020
Daniel Wang (undergraduate researcher) JHU Robert George Gerstmyer Award for outstanding achievement in mechanical engineering	2020
Franz O'Mealley (undergraduate advisee) JHU Dept. of Mechanical Engineering Chares A. Miller Award	2020
Lichen Fang (PhD student) ASME Applied Mechanics Division Haythornthwaite Foundation Student Travel Award	2019
Ozan Erol (Postdoctoral fellow) National Institute of Health NRSA F32 Post-Doctoral Fellowship (declined)	2019
Ozan Erol (Postdoctoral fellow) Johns Hopkins University Whiting School of Engineering Research Trainee Award Finalist	2019
Franz O'Mealley (undergraduate advisee) 2019 JHU Dept. of Mechanical Engineering Robert George Gerstmyer Award	2019

Rebecca Grusby (undergraduate researcher) Johns Hopkins University Provost's Undergraduate Research Award (PURA)	2018
Yishu Yan (M.S.E. student) ASME International Mechanical Engineering Congress and Exposition NSF Poster Competition Travel Award	2018
Khalid Elawad (undergraduate researcher) American Society of Cell Biology MAC Travel Award and 2 <sup>nd</sup> place poster award	2017
Franz O'Mealley (undergraduate advisee) Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019, and Spring 2020 Dean's List	2017-2020
Tara Foley (undergraduate advisee) Fall 2017 and Spring 2018 Dean's List	2017, 2018
Mohid Khan (undergraduate advisee) Fall 2017 and Spring 2018 Dean's List	2017, 2018
Rachel Swanstrom (undergraduate advisee) Fall 2017 and Spring 2018 Dean's List	2017, 2018

## **PUBLICATIONS (50 papers, >5200 citations, h-index=26 from Google Scholar)**

(bold: graduate student or post-doc in my lab, *italics*: undergraduate in my lab, <sup>v</sup>: visiting student in my lab, \*:corresponding author)

### **[book chapter]**

1. **A. Eisape, B. Sun, J. Li, S. H. Kang\***, "Nanoporous composite sensors", book chapter for nanoporous carbons for soft and flexible device, Springer, in press. (invited book chapter)

### **[under review]**

52. H. Xun, *C. Shallal*, J. Unger, **R. Tao**, A. Torres, M. Vladimirov, J. Frye, M. Singhala, B. Horne, P. Yesantharao, B. S. Kim, B. Burke, M. Montana, M. Talcott, B. Winters, M. Frisella, B. Kushner, J. M. Sacks, J. K. Guest\*, **S. H. Kang\***, J. Caffrey\*, "Vent-Lock: A 3D Printed Ventilator Multiplexer to Enhance the Capacity of Treating Patients with COVID-19," under review. (medRxiv: <https://doi.org/10.1101/2020.09.16.20195230>)

### **[in press]**

51. H. Xun, S. Clarke, N. Baker, A. Wong, E. Lee, L. El Eter, R. Blumenfeld, **R. Tao**, P. Yesantharao, G. Brandachar, **S. H. Kang\***, J. M. Sacks\*, "Method, Material and Machine: A Review of the Basic 3Ms for the Medical Professional Utilizing 3D Printing for Accelerated Device Production," **Journal of the American College of Surgeons**, in press.

### **[published after starting independent career]**

50. **L. Fang, Y. Yan**, O. Agarwal, J. E. Seppala, K. Migler, T. D. Nguyen, **S. H. Kang\***, "Estimations of the Effective Young's Modulus of Specimens Prepared by Fused Filament Fabrication," **Additive Manufacturing**, 42, 101983 (2021).

49. **M. Omar<sup>+</sup>, B. Sun<sup>+</sup>, S. H. Kang\***, "Good reactions for low-power shape-memory microactuators," **Science Robotics**, 6, eabh1560 (2021). (<sup>+</sup>: equal contribution)

48. **B. Shen, S. H. Kang\***, “Designing Self-Oscillating Matter,” **Matter**, 4, 766-769 (2021).
47. U. Erturun, **A. Eisape, S. H. Kang, J. E. West\***, “Hybrid energy harvesting using piezoelectric nanogenerator and electrostatic generator,” **Applied Physics Letters**, 118, 063902 (2021).
46. **L. Fang, Y. Yan, O. Agarwal, S. Yao, J. E. Seppala\*, S. H. Kang\***, “Effects of Environmental Temperature and Humidity on the Geometry and Strength of Polycarbonate Specimens Prepared by Fused Filament Fabrication,” **Materials**, 13, 4414 (2020). (invited article for a special issue on New Materials and Approaches in Polymer Additive Manufacturing)
45. **L. Fang, Y. Yan, O. Agarwal, J. E. Seppala, K. J. Hemker, S. H. Kang\***, “Processing-Structure-Property Relationships of bisphenol-A-Polycarbonate Samples Prepared by Fused Filament Fabrication,” **Additive Manufacturing**, 35, 101285 (2020).
44. **S. Orrego, Z. Chen, U. Krekora, D. Hou, S.-Y Jeon, M. Pittman, C. Montoya, Y. Chen, S. H. Kang\***, “Bioinspired materials with self-adaptable mechanical properties,” **Advanced Materials**, 1906970 (2020).
43. **E. Bachtiar, O. Erol, M. Millrod, R. Tao, D. H. Gracias, L. R. Romer, S. H. Kang\***, “3D-printing and characterizations of a soft and biostable elastomer with high flexibility and strength for biomedical applications,” **Journal of the Mechanical Behavior of Biomedical Materials**, 103649 (2020).
42. J. Li<sup>+</sup>, **L. Fang<sup>+</sup>, B. Sun, X. Li, S. H. Kang\***, “Recent progress in flexible and stretchable piezoresistive sensors and their applications,” **Journal of The Electrochemical Society**, 167, 037561 (2020). (+: equal contribution)
41. **B. Shen, O. Erol, L. Fang, S. H. Kang\***, “Programming the Time into 3D Printing: Current Advances and Future Directions in 4D Printing,” **Multifunctional Materials**, 3, 012001 (2020). (invited review)
40. **S.-Y. Jeon, S. H. Kang\***, “Electrochemical reactions drive morphing of materials,” **Nature**, 573, 198-199 (2019).
39. W.-H. Jung, **K. Elawad, S. H. Kang, Y. Chen**, “Cell-cell adhesion and myosin activity regulate cortical actin assembly in mammary gland epithelium on concaved surface,” **Cells**, 8, 813 (2019).
38. A. Dagro, K. Ramesh, A. Venkatesan, **S. H. Kang, S. Orrego, L. Rajbhandari**, “Quantifying the local mechanical properties of cells in a fibrous three-dimensional microenvironment,” **Biophysical Journal**, 117, 817-828 (2019).
37. Z. Jiang<sup>+</sup>, **O. Erol<sup>+</sup>, D. Chatterjee<sup>+</sup>, W. Xu, N. Hibino, L. H. Romer, S. H. Kang**, and D. H. Gracias, “Direct Ink Writing of Poly(tetrafluoroethylene) (PTFE) with Tunable Mechanical Properties,” **ACS Materials and Interfaces**, 11, 28289-28295 (2019). (+: equal contribution)
36. J. Liu, **O. Erol, A. Pantula, W. Liu, Z. Jiang, K. Kobayashi, D. Chatterjee, N. Hibino, L. H. Romer, S. H. Kang**, T. D. Nguyen and D. H. Gracias, “Dual-gel 4D Printing of Bioinspired Tubes,” **ACS Materials and Interfaces**, 11, 8492-8498 (2019).
35. J. Li<sup>v</sup>, **S. Orrego, J. Pan, P. He<sup>v</sup>, S. H. Kang\***, “Ultrasensitive, flexible, and low-cost nanoporous piezoresistive composite for tactile pressure sensing,” **Nanoscale**, 11, 2779-2786 (2019).
34. W. Wang, J. V. I. Timonen, A. Carlson, D.-M. Drotlef, C. T. Zhang, S. Kolle, A. Grinthal, T.-S. Wong, B. Hatton, **S. H. Kang**, S. Kennedy, J. Chi, R. Thomas Blough, M. Sitti, L. Mahadevan and J. Aizenberg, “Multifunctional ferrofluid-infused surfaces with reconfigurable multiscale topography,” **Nature**, 559, 77–82 (2018).

33. L. Fang, J. Li<sup>v</sup>, Z. Zhu, S. Orrego, and S. H. Kang\*, “Piezoelectric polymer thin films with architected cuts,” **Journal of Materials Research**, 33, 330-342 (2018).
  32. J. Li<sup>v</sup>, Z. Zhu, L. Fang, S. Guo, U. Erturun, Z. Zhu, J. E. West, S. Ghosh, S. H. Kang\*, “Analytical, Numerical, and Experimental Studies of Viscoelastic Effects of Soft Piezoelectric Nanocomposites,” **Nanoscale**, 9, 14215-14228 (2017).
  31. N. Wadhwa, J. G. Chen, J. B. Sellon, D. Wei, M. Rubinstein, R. Ghaffari, D. M. Freeman, O. Buyukozturk, P. Wang, S. Sun, S. H. Kang, K. Bertoldi, F. Durand, and W. T. Freeman, “Motion microscopy for visualizing and quantifying small motions,” **Proceedings of the National Academy of Sciences**, 114, 11639–11644 (2017).
  30. S. Chen, J. Li<sup>v</sup>, L. Fang, Z. Zhu<sup>v</sup>, and S. H. Kang\*, “Simple Triple-State Polymer Actuators with Controllable Folding Characteristics,” **Applied Physics Letters**, 110, 133506 (2017).
  29. S. Orrego, K. Shoele, A. Ruas, K. Doran, B. Caggiano, R. Mittal\*, and S. H. Kang\*, “Harvesting Ambient Wind Energy with an Inverted Piezoelectric Flag,” **Applied Energy**, 194, 212-222 (2017).
  28. P. Wang, Y. Zheng, M. C. Fernandes, Y. Sun, K. Xu, S. Sun, S. H. Kang, V. Tournat, and K. Bertoldi, “Harnessing Geometric Frustration to Form Band Gaps in Acoustic Networks,” **Physical Review Letters**, 118, 084302 (2017).
  27. Y. Zarate, S. Babaei, S. H. Kang, I. V. Shadrivov, D. N. Neshev, K. Bertoldi, David A. Powell, “Elastic Metamaterials for Tuning Circular Polarization of Electromagnetic Waves,” **Scientific Reports**, 6, 28273 (2016).
  26. J. Liu, T. Gu, S. Shan, S. H. Kang, J. C. Weaver, and K. Bertoldi, “Harnessing Buckling to Design Architected Materials That Exhibit Effective Negative Swelling,” **Advanced Materials**, 28, 6619-6624 (2016).
  25. S. H. Kang\* and Michel Dickey\*, “Patterning via self-organization and self-folding: beyond conventional lithography,” **Materials Research Society Bulletin**, 41, 93-96 (2016). (*guest editor of the theme issue, invited review*)
  24. S. Shan<sup>†</sup>, S. H. Kang<sup>†</sup>, J. R. Raney<sup>†</sup>, P. Wang, L. Fang, F. Candido, J. Lewis, and K. Bertoldi, “Multistable Architected Materials for Trapping Elastic Strain Energy,” **Advanced Materials**, 27, 4296-4301 (2015). (<sup>†</sup>: equal contribution)
  23. S. Shan, S. H. Kang, Z. Zhao, L. Fang, and K. Bertoldi, “Design of Planar Isotropic Negative Poisson’s Ratio Structures,” **Extreme Mechanics Letters**, 4, 96-102 (2015).
  22. P. Wang, F. Casadei, S. H. Kang, and K. Bertoldi, “Locally Resonant Band Gaps in Periodic Beam Lattices by Tuning Connectivity,” **Physical Review B**, 91, 020103(R) (2015). (Rapid Communications)
- [before starting independent career]**
21. S. H. Kang, S. Shan, A. Kosmrlj, W. L. Noorduin, S. Shian, J. C. Weaver, D. R. Clarke, and K. Bertoldi, “Complex Ordered Patterns in Mechanical Instability Induced Geometrically Frustrated Triangular Cellular Structures,” **Physical Review Letters**, 112, 09870 (2014).
  20. S. Shan, S. H. Kang, P. Wang, C. Qu, S. Shian, E. R. Chen, J. C. Weaver, and K. Bertoldi, “Harnessing Multiple Folding Mechanisms in Soft Periodic and Porous Structures to Design Highly Tunable Phononic Crystals,” **Advanced Functional Materials**, 24, 4935 (2014).
  19. J. Shim, S. Shan, A. Kosmrlj, S. H. Kang, E. R. Chen, J. C. Weaver, and K. Bertoldi, “Harnessing Instabilities for Design of Soft Reconfigurable Auxetic/Chiral Materials,” **Soft Matter**, 9, 8198-8202 (2013).

18. S. H. Kang<sup>†</sup>, S. Shan<sup>†</sup>, W. Noorduin<sup>†</sup>, M. Khan, J. Aizenberg, and K. Bertoldi, “Buckling-Induced Reversible Symmetry Breaking and Chiral Amplification Using Supported Cellular Structures,” **Advanced Materials**, 25, 3380-3385 (2013). (<sup>†</sup>: equal contribution)
17. A. Grinthal, S. H. Kang, A. K. Epstein, M. Aizenberg, M. Khan, and J. Aizenberg, “Steering Nanofibers: An Integrative Approach to Bio-Inspired Fiber Fabrication and Assembly,” **Nano Today**, 7, 35-52 (2012). (invited review)
16. S. H. Kang, N. Wu, A. Grinthal, and J. Aizenberg, “Meniscus Lithography: Evaporation-Induced Self-Organization of Pillar Arrays into Moiré Patterns,” **Physical Review Letters**, 107, 177802 (2011).
15. T.-S. Wong, S. H. Kang, S. K. Y. Tang, E. J. Smythe, B. D. Hatton, A. Grinthal, and J. Aizenberg, “Bioinspired Self-Repairing Slippery Surfaces with Pressure-Stable Omniphobicity,” **Nature**, 477, 443-447 (2011).
14. A. Seminara, B. Pokroy, S. H. Kang, M. P. Brenner, and J. Aizenberg, “On the Mechanism of Nanostructure Movement under Electron Beam and Its Application in Patterning,” **Physical Review B**, 83, 235438 (2011).
13. D. J. Lipomi, R. V. Martinez, M. A. Kats, S. H. Kang, P. Kim, J. Aizenberg, F. Capasso, and G. M. Whitesides, “Patterning the Tips of Optical Fibers with Metallic Nanostructures Using Nanoskiving,” **Nano Letters**, 11, 632-636 (2011).
12. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, “Control of Shape and Size of Nanopillar Assembly by Adhesion-Mediated Elastocapillary Interaction,” **ACS Nano**, 11, 6323-6331 (2010).
11. B. Pokroy, B. Aichmayer, A. S. Schenk, B. Haimov, S. H. Kang, P. Fratzl, and J. Aizenberg, “Sonication-Assisted Synthesis of Large, High-Quality Mercury-Thiolate Single Crystals Directly from Liquid Mercury,” **Journal of the American Chemical Society**, 132, 14355-14357 (2010).
10. D. J. Lipomi, M. A. Kats, P. Kim, S. H. Kang, J. Aizenberg, F. Capasso, and G. M. Whitesides, “Fabrication and Replication of Arrays of Single- or Multi-Component Nanostructures by Replica Molding and Mechanical Sectioning,” **ACS Nano**, 4, 4017-4026 (2010).
9. B. Pokroy, S. H. Kang, L. Mahadevan, and J. Aizenberg, “Self-Organization of a Mesoscale Bristle into Ordered, Hierarchical Helical Assemblies,” **Science**, 323, 237-240 (2009).
8. K. C. Mandal, S. H. Kang, M. Choi, J. Chen, X.-C. Zhang, J. M. Schleicher, C. A. Schmuttenmaer, and N. C. Ferneli, “III–VI Chalcogenide Semiconductor Crystals for Broadband Tunable THz Sources and Sensors,” **IEEE Journal of Selected Topics in Quantum Electronics**, 14, 284-288 (2008).
7. K. C. Mandal, S. H. Kang, M. Choi, R. David Rauh, “Rare-Earth Doped Potassium Lead Bromide Mid-IR Laser Sources for Standoff Detection,” **International Journal of High Speed Electronics and Systems**, 18, 735 (2008).
6. K. C. Mandal, S. H. Kang, M. Choi, A. Kargar, M. J. Harrison, D. S. McGregor, A. E. Bolotnikov, G. A. Carini, G. C. Camarda, and R. B. James, “Characterization of Low-Defect Cd<sub>0.9</sub>Zn<sub>0.1</sub>Te and CdTe Crystals for High-Performance Frisch Collar Detectors,” **IEEE Transactions on Nuclear Science**, 54, 802-806 (2007).
5. K. C. Mandal, S. H. Kang, M. Choi, J. Wei, L. Zheng, H. Zhang, G. E. Jellison, M. Groza, A. Burger, “Component Overpressure Growth and Characterization of High Resistivity CdTe Crystals for Radiation Detectors,” **Journal of Electronic Materials**, 36, 1013-1020 (2007).
4. J. Chen, V. Leblanc, S. H. Kang, P. J. Benning, D. Shut, M. A. Baldo, M. A. Schmidt, and V. Bulović, “High Definition Digital Fabrication of Active Organic Devices by Molecular Jet Printing,” **Advanced Functional**

**Materials**, 17, 2722-2727 (2007).

3. V. Leblanc, J. Chen, S. H. Kang, V. Bulović, and M. A. Schmidt, “Micromachined Printheads for the Evaporative Patterning of Organic Materials and Metals,” **Journal of Microelectromechanical Systems**, 16, 394-400 (2007).

2. K. C. Mandal, S. H. Kang, M. Choi, J. Bello, L. Zheng, H. Zhang, M. Groza, U. N. Roy, A. Burger, G. E. Jellison, D. E. Holcomb, G. W. Wright, J. A. Williams, “Simulation, Modeling, and Crystal Growth of  $\text{Cd}_{0.9}\text{Zn}_{0.1}\text{Te}$  for Nuclear Spectrometers,” **Journal of Electronic Materials**, 35, 1251-1256 (2006).

1. S. H. Kang, T. Crisp, I. Kyymissis, and V. Bulović, “Memory Effect from Charge Trapping in Layered Organic Structures,” **Applied Physics Letters**, 85, 4666-4668 (2004).

### **PATENTS (6 patents, 3 pending patents, and 8 invention disclosures)**

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“Slippery Surfaces with High Pressure Stability, Optical Transparency, and Self-Healing Characteristics,” J. Aizenberg, M. Aizenberg, S. H. Kang, P. Kim, T. S. Wong, U.S. Patent No. 9,353,646, 9,121,306, 9,932,482.

“Sanitization Systems and Components Thereof Having a Slippery Surface,” J. Aizenberg, M. Aizenberg, S. H. Kang, P. Kim, T. S. Wong, U.S. Patent No. 10,450,467.

“Anti-Counterfeiting Methods,” J. Aizenberg, T. S. Wong, S. H. Kang, X. He, U.S. Patent No. 9,937,743.

“Containers, Bottles, Drums, Vats, and Tanks Having a Slippery Surface,” J. Aizenberg, M. Aizenberg, S. H. Kang, P. Kim, T. S. Wong, U.S. Patent No. 10,233,334.

“Biomimetic Self-Adaptable Systems,” S. H. Kang, S. Orrego, U.S. Provisional Patent Application No. 62/555,983, filed in September 2017.

“Shape Recoverable and Reusable Energy Absorbing Structures, Systems and Methods for Manufacture Thereof,” S. H. Kang, K. Bertoldi, J. R. Raney, J. A. Lewis, S. Sicong, U.S. Provisional Patent Application No. PCT/US2015/27385, filed in April 2015.

“Anastomotic Coupling Device,” H. Xun, J. Sacks, C. Hicks, S. H. Kang, G. Brandacher, U.S. Provisional Patent Application No. 63/048,897, filed in July 2020.

“Vent-Lock: A Safer Ventilator Splitter for Better Breathing,” S. H. Kang, H. Xun, J. Caffrey, B. Winters, J. K. Guest, A. Sapirstein, J. S. Unger, C. C. Shallal, M. Vladimirov, R. Tao, disclosed in April 2020.

“Drain-Lock: A Sutureless Device to Secure Surgical Drains,” S. H. Kang, J. Sacks, R. Tao, H. Xun, disclosed in November 2019.

“Uro-Lock: A Sutureless, Catheterless Urethrovesical Anastomosis for Radical Prostatectomy,” M. Allaf, S. H. Kang, J. Sacks, H. Xun, disclosed in November 2019.

“Shape-Changing Implants for Pediatrics,” S. H. Kang, D. H. Gracias, L. Romer, N. Hibino, G. O. Erol, disclosed in October 2018.

“Fluoropolymer Ink and Process for Additive Manufacturing,” D. Chatterjee, O. Erol, D. Gracias, N. Hibino, Z. Jiang, S. H. Kang, L. Romer, disclosed in September 2018.

“3D Printing of Thermoplastic Silicone-Carbonate-Polyurethane Copolymer,” E. Bachtiar, S. H. Kang, disclosed in June 2018.

“Flexible and Hybrid Energy Harvesting Device Combining Piezoelectric and Electrostatic Conversions,” A. Elsaie, U. Erturun, S. H. Kang, J. West, disclosed in June 2018.

“Tunable Thin-Film Acoustic Sensor, Manufacturing Methods, and Processing Algorithms,” I. McLane, J. E. West, D. Emmanoulidou, M. Elhilali, V. Rennoll, U. Erturun, S. Orrego, S. H. Kang, disclosed in June 2017.

## **INVITED PRESENTATIONS**

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68. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical Engineering, Northwestern University, Evanston, IL, To be determined.

67. S. H. Kang, “Self-adaptive materials, structures and devices,” Department of Mechanical and Aerospace Engineering, Ohio State University, Columbus, OH, February 2021.

66. S. H. Kang, “Self-adaptive materials, structures and devices,” Department of Mechanical Engineering, Villanova University, Villanova, PA, November 2020.

65. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials & medical devices,” Department of Mechanical Engineering, University of Wisconsin, Madison, WI, October 2020.

64. S. H. Kang, “Self-adaptive materials, structures and devices,” Air Force Research Laboratory, Dayton, OH, July 2020.

63. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials & medical devices,” School of Mechanical Engineering, Georgia Institute of Technology, Atlanta, GA, February 2020.

62. S. H. Kang, “Bioinspired self-adaptable materials and “growing” cardiovascular implants,” College of Engineering, Michigan State University, East Lansing, MI, February 2020.

61. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical Engineering, Massachusetts Institute of Technology, Cambridge, MA, February 2020.

60. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical Engineering, University of South Carolina, Columbia, SC, February 2020.

59. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical Engineering, University of Utah, Salt Lake City, UT, November 2019.

58. S. H. Kang, “Bioinspired Multifunctional Materials and Devices with Self-Adaptability by Harnessing Mechanics,” ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.

57. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical Engineering, McGill University, Montreal, Canada, October 2019.

56. S. H. Kang, “Harnessing fluid-structure interactions to utilize ambient wind energy for self-powered devices,” Biofuels - 2019, Toronto, Canada, October 2019.

55. **S. Orrego, Z. Chen, D. Hou, U. Krekora, S. H. Kang**, “Self-adaptable material systems inspired by bone,” 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019. (**Symposium keynote presentation**)



54. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” School of Mechanical Engineering, Purdue University, West Lafayette, IN, September 2019.
53. S. H. Kang, “Metamaterials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Physics, University of North Texas, Dallas, TX, September 2019.
52. S. H. Kang, “Bioinspired Synthesis of Multifunctional Materials with Self-Adaptable Mechanical Properties and Regeneration,” The 5th “Multifunctional Materials for Defense” Workshop, Arlington, VA, August 2019.
51. S. H. Kang, “Bioinspired Materials with Self-Adaptable Mechanical Properties and Regeneration Capability,” China-America Frontiers of Engineering Symposium, San Diego, CA, June 2019.
50. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Air Force Research Laboratory, Dayton, OH, April 2019.
49. S. H. Kang, “Bioinspired self-adaptable materials and architected materials with adaptive energy absorption,” Department of Materials Science and Engineering, University of California, Los Angeles, CA, April 2019.
48. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical and Civil Engineering, California Institute of Technology, Pasadena, CA, April 2019.
47. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” HRL Laboratories, Malibu, CA, April 2019.
46. S. H. Kang, “Architected materials with adaptive energy absorption and self-adaptable cardiovascular implants,” Department of Mechanical and Aerospace Engineering, University of California, Los Angeles, CA, April 2019.
45. S. H. Kang, “Architected materials with adaptive energy absorption and bioinspired self-adaptable materials,” Department of Mechanical and Aerospace Engineering, University of California, San Diego, CA, April 2019.
44. S. H. Kang, “Bioinspired self-adaptable materials and architected materials with adaptive energy absorption,” Department of Materials Science and Engineering, University of California, Irvine, CA, April 2019.
43. S. H. Kang, “Bioinspired self-adaptable implant devices and materials,” Johns Hopkins University Department of Medicine/Whiting School of Engineering Research Retreat, Baltimore, MD, March 2019 (**Award presentation**).
42. S. H. Kang, “Bioinspired self-adaptable materials and ultrasensitive low-cost nanoporous composites,” Johns Hopkins Applied Physics Laboratory, Laurel, MD, January 2019.
41. S. H. Kang, “Bioinspired “growing” cardiovascular implant devices by 3D printing,” The 12<sup>th</sup> IEEE Int. Conf. on Nano/Molecular Medicine and Engineering (IEEE-NANOMED 2018), Honolulu, HI, December 2018.
40. S. H. Kang, “Bioinspired self-adaptable materials and “growing” cardiovascular implant devices,” Department of Mechanical and Materials Engineering, Duke University, Durham, NC, October 2018.
39. S. H. Kang, “Bioinspired self-adaptable materials and “growing” cardiovascular implant devices,” Department Chemical and Biomolecular Engineering, North Carolina State University, Raleigh, NC, October 2018.
38. S. Orrego, U. Krekora, E. Kang, D. Hou, E. Kang, S. H. Kang, “Bioinspired materials that can sense and adapt to mechanical loadings and damages,” First International Conference on 4D Materials and Systems, The Electrochemical Society, Yonezawa, Japan, August 2018.

37. S. H. Kang, “Bioinspired self-adaptable materials and “growing” cardiovascular implant devices,” Department of Mechanical Engineering, Seoul National University, Seoul, Korea, August 2018.
36. S. H. Kang, “Bioinspired self-adaptable materials and implant devices,” Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, August 2018.
35. S. H. Kang, “Mechanical metamaterials for tunable elastic wave propagation and reversible energy absorption by harnessing deformation behaviors of soft periodic structures,” Korea Institute of Machinery & Materials, Daejeon, Korea, August 2018.
34. S. H. Kang, “Bioinspired self-adaptable materials and “growing” cardiovascular implant devices,” Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, August 2018.
33. S. H. Kang, “Ultrasensitive Low-Cost Nanoporous Composites with a Wide Pressure Sensing Range for Tactile Sensors,” International Union of Materials Research, Daejeon, Korea, August 2018.
32. S. H. Kang, “Bioinspired self-adaptable materials and implant devices,” Department of Mechanical Science and Engineering, University of Illinois at Urbana-Champaign, Urbana, IL, April 2018.
31. S. H. Kang, “Bioinspired materials with self-adaptable mechanical properties and self-regeneration,” 5<sup>th</sup> Young Scientist Workshop, Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, February 2018.
30. S. H. Kang, “Synthesis of polymeric composites for ultrasensitive low-cost sensors and bone-inspired materials with self-adaptable mechanical properties and self-healing,” School of Chemical Engineering, Sungkyunkwan University, Suwon, Korea, November 2017.
29. S. H. Kang, “Harnessing behaviors of piezoelectric polymer composites for enhancing charge generation and bone-inspired materials with self-adaptable mechanical properties and self-healing,” Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, November 2017.
28. S. H. Kang, “Synthesis of polymer composites for ultrasensitive low-cost sensors and bone-inspired materials with self-regulating mechanical properties,” Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, November 2017.
27. S. H. Kang, “Ultrasensitive low-cost tactile sensors and bioinspired mineralized scaffolds with self-adaptable mechanical properties and self-regeneration,” Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea, November 2017.
26. S. H. Kang, “Harnessing behaviors of polymer composites for ultrasensitive low-cost sensors and bone-inspired materials with self-regulating mechanical properties,” Department of Materials Science and Engineering, Pohang University of Science and Technology, Pohang, Korea, November 2017.
25. S. H. Kang, “Architected materials for tunable elastic wave propagation and reversible energy absorption,” Korea Institute of Science and Technology, Seoul, Korea, November 2017.
24. S. H. Kang, “Harnessing behaviors of piezoelectric polymer composites for enhancing charge generation and bone-inspired materials with self-adaptable mechanical properties and self-healing,” College of Engineering and Applied Science, University of Colorado-Denver, Denver, CO, October 2017
23. S. H. Kang, “Design, Fabrication, and Characterization of Architected Materials for Energy Absorption and Vibration Propagation Control,” Department of Mechanical Engineering, University of Maryland, Baltimore County, Baltimore, MD, December 2016.

22. S. H. Kang, “The Future of Vibration Energy Transfer in Solids and Structures: Needs and Opportunities,” Army Research Office Invited Workshop on the Future of Vibration Energy Transfer in Solids and Structures: Needs and Opportunities, Seattle, WA, October 2016.
21. S. H. Kang, “Design, Fabrication, and Characterization of Architected Materials for Energy Absorption and Vibration Propagation Control,” Department of Mechanical and Manufacturing Engineering, University of Calgary, Calgary, AB, Canada, October 2016.
20. S. H. Kang, “Steering Behaviors of 3D Printed Materials and Structures,” The United States Army Research Laboratory, Aberdeen, MD, August 2016.
19. S. H. Kang, “Design, Fabrication, and Characterization of Architected Materials for Energy Absorption and Tunable Vibration Propagation,” Under Armour, Baltimore, MD, July 2016.
18. S. H. Kang, “Design, Fabrication, and Characterization of Architected Materials for Tunable Wave Propagation and Shape-Recoverable Energy-Absorption,” Department of Mechanical and Materials Engineering, Portland State University, Portland, OR, May 2016.
17. S. H. Kang, “Architected Materials for Tunable Elastic Wave Propagation and Reversible Energy Absorption,” Department of Mechanical Engineering, Stony Brook University, Stony Brook, NY, May 2016.
16. S. H. Kang, “Steering Interactions between Bioinspired Polymeric Fibrous Structures and Fluids,” National Institute of Standards and Technology, Gaithersburg, MD, June 2015.
15. S. H. Kang, “3D Technologies and Their Applications for Architected Materials,” Greater Baltimore Committee Education and Workforce, Baltimore, MD, May 2015.
14. S. H. Kang, “Steering Evaporation-Induced Self-Assembly of Nanopost Arrays by Interplay between Mechanics and Surface Chemistry,” Foundations of Nanoscience, Snowbird, UT, April 2015.
13. S. H. Kang, S. Shan, J. R. Raney, P. Wang, J. Lewis, and K. Bertoldi, “Design, Fabrication and Characterization of Architected Materials for Tunable Wave Propagation and Shape-Recoverable Energy-Absorption,” 2015 Mach Conference, Annapolis, MD, April 2015. **(keynote presentation of a session)**
12. S. H. Kang, “Harnessing Soft Materials for Functionality through Deformation and Instability,” 4th EITA Young Investigator Conference, Cambridge, MA, August 2015.
11. S. H. Kang, “Harnessing Deformation and Instability of Soft Structured Materials for Tunable Structures and Devices,” Department of Aeronautics and Astronautics, University of Washington, Seattle, WA, February 2015.
10. S. H. Kang and K. Bertoldi, “Soft Structured Materials: Functionality through Deformation and Instability,” Materials Research Society Meeting, San Francisco, CA, April 2014.
9. S. H. Kang, “Steering Structured Surfaces: Harnessing Geometry, Mechanical and Surface Properties to Form Complex Functional Patterns by Self-Organization,” Department of Mechanical and Industrial Engineering, University of Illinois, Chicago, IL, April 2014.
8. S. H. Kang, “Steering Structured Surfaces: Harnessing Geometry, Mechanical and Surface Properties to Form Complex Functional Patterns by Self-Organization,” Department of Mechanical Engineering, Virginia Polytechnic Institute and State University, Blacksburg, VA, April 2014.
7. S. H. Kang, “Steering Materials and Structures Under Extreme Conditions: Harnessing Geometry, Mechanical and Surface Properties to Form Complex Functional Patterns by Self-Organization,” Department of Mechanical Engineering, Johns Hopkins University, Baltimore, MD, March 2014.

6. S. H. Kang, “Steering Structured Surfaces: Harnessing Geometry, Mechanical and Surface Properties to Form Complex Functional Patterns by Self-Organization,” Department of Mechanical Engineering, University of Connecticut, Storrs, CT, February 2014.
5. S. H. Kang, “Self-Organization of Bioinspired Structured Surfaces by Interaction with Liquid,” Seoul National University, Seoul, Korea, July 2013.
4. S. H. Kang, “Harnessing Pattern Formation by Interaction between Liquid and Bioinspired Structured Surfaces,” Korea Institute of Science and Technology, Seoul, Korea, July 2013.
3. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, “Evaporation-Induced Self-Organization of Polymer Nanorod Arrays: When Structured Solids Met a Liquid,” Society of Engineering Science 49<sup>th</sup> Annual Technical Meeting, Atlanta, GA, October 2012.
2. S. H. Kang and J. Aizenberg, “Steering Nanostructures: Controlling Self-Assembly of Bio-inspired Nanofibers,” American Chemical Society Spring Meeting, San Diego, CA, March 2012.
1. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, “Shape and Size Control of Polymer Nanopost Assembly by Adhesion-Mediated Elastocapillary Interaction: Interplay between Mechanics and Surface Science,” Gordon-Kenan Research Seminar (Adhesion), Lewinston, ME, July 2011.

## **CONTRIBUTED PRESENTATIONS**

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62. S. H. Kang, “Multi-phase Multifunctional Materials that Sense Mechanical Loading and Adapt,” 2021 Spring Materials Research Society Meeting (Virtual), April 2021.
61. S. H. Kang, “Architected Liquid Crystalline Elastomers with Strain Rate-Adaptive Extreme Energy Absorption,” 2021 Spring Materials Research Society Meeting (Virtual), April 2021.
60. S. H. Kang, “Bioinspired Materials with Self-Adaptable Mechanical Properties,” 2021 American Physical Society March Meeting (Virtual), March 2021.
59. S. H. Kang, “Effects of Environmental Temperature and Humidity on the Geometry and Strength of Polycarbonate Specimens Prepared by Fused Filament Fabrication,” 2021 American Physical Society March Meeting (Virtual), March 2021.
58. S. H. Kang, “Mechanical Metamaterials with Strain-Rate Adaptive Energy Absorption,” 2021 American Physical Society March Meeting (Virtual), March 2021.
57. S. H. Kang, “Bioinspired Materials with Self-Adaptable Mechanical Behaviors,” 2020 Fall Materials Research Society Meeting (Virtual), November 2020.
56. S. H. Kang, “Vent-Lock—A Bioinspired Ventilator Splitter to Enhance the Capacity of Treating Patients with COVID-19,” 2020 Fall Materials Research Society Meeting (Virtual), November 2020.
55. **S. Jeon**, **Z. Zhu**, N. Traugutt, **B. Shen**, T. D. Nguyen, C. M. Yakacki, and S. H. Kang, “Extreme Energy Absorbing Architected Materials Based on Liquid Crystal Elastomers,” American Society of Mechanical Engineers International Mechanical Engineering Congress and Exposition (Virtual), November 2020.
54. **S. Jeon**, **Z. Zhu**, N. Traugutt, **B. Shen**, T. D. Nguyen, C. M. Yakacki, and S. H. Kang, “Extreme energy absorbing architected materials based on liquid crystal elastomer structures,” Society of Engineering Science Annual Meeting (Virtual Live Talk), September 2020.

53. **S. Orrego, Z. Chen, U. Krekora, D. Hou, S. Jeon, M. Pittman, C. Montoya, Y. Chen, S. H. Kang**, “Bioinspired materials with self-adaptable mechanical behaviors,” Society of Engineering Science Annual Meeting (Virtual Live Talk), September 2020.
52. **E. Bachtiar, G. O. Erol, M. Millrod, R. Tao, D. H. Gracias, L. H. Romer, and S. H. Kang**, “3D printing and characterization of a soft and biostable elastomer with high flexibility and strength for biomedical applications,” Society of Engineering Science Annual Meeting (Virtual Live Talk), September 2020.
51. **S. Orrego, Z. Chen, U. Krekora, D. Hou, S. Jeon, M. Pittman, C. Montoya, Y. Chen, S. H. Kang**, “Bioinspired Multifunctional Composites with Self-Adaptable Mechanical Properties,” Gordon Research Conference on Multifunctional Materials and Structures, Ventura, CA, January 2020.
50. **S. H. Kang**, “Multifunctional Materials with Self-Adaptive Mechanical Properties and Regeneration,” Materials Research Society Meeting, Boston, MA, December 2019.
49. **S. Jeon, Z. Zhu, C. M. Yakacki, T. D. Nguyen, and S. H. Kang**, “Extreme impact energy absorption behaviors of liquid crystal elastomer structures,” ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.
48. **G. O. Erol, E. Bachtiar, A. Horowitz, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang**, “Self-adaptive cardiovascular implants to accommodate growth,” ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.
47. **L. Fang, Y. Yan, O. Agarwal, K. J. Hemker, and S. H. Kang**, “Processing-structure-property relationships of polycarbonate samples prepared by fused filament fabrication,” ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.
46. **L. Fang, Y. Yan, O. Agarwal, K. J. Hemker, and S. H. Kang**, “Effects of environmental temperature and humidity on the geometry and strength of polycarbonate specimens prepared by fused filament fabrication,” ASME International Mechanical Engineering Congress and Exposition, Salt Lake City, UT, November 2019.
45. **S. Jeon, Z. Zhu, C. M. Yakacki, T. D. Nguyen, and S. H. Kang**, “Extreme impact energy trapping metamaterials based on liquid crystal elastomers,” 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019.
44. **L. Fang, Y. Yan, O. Agarwal, K. J. Hemker, and S. H. Kang**, “Geometrical and mechanical characterization of interlayer bonding quality in fused filament fabrication of polycarbonate,” 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019.
43. **Z. Jiang, G. O. Erol, D. Chatterjee, W. Xu, N. Hibino, L. H. Romer, S. H. Kang, and D. H. Gracias**, “3D printing of polytetrafluoroethylene with direct ink writing,” 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019.
42. **G. O. Erol, E. Bachtiar, A. Horowitz, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang**, “Self-adaptive cardiovascular paediatric conduits to accommodate growth,” 56 Annual Technical Meeting of the Society of Engineering Science, St. Louis, MO, October 2019.
41. **G. O. Erol, E. Bachtiar, A. Horowitz, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang**, “3D Printed Shape-Adaptive Right Ventricle-to-Pulmonary Artery Conduits with Growth Potential,” 2019 International Conference on Bioengineering and Nanotechnology, Baltimore, MD, May 2019.
40. **G. O. Erol, E. Bachtiar, A. Horowitz, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang**, “Bioinspired “growing” RV-PA conduits for pediatric patients with congenital heart defects,” the 6th International Conference on Clinical and Engineering Frontiers in Pediatric and Congenital Heart Disease, Philadelphia, PA, May 2019.

39. **S. Orrego, Z. Chen, D. Hou, U. Krekora, E. Kang, S. H. Kang**, “Bioinspired materials with self-regulating mechanical properties upon loading/damages,” American Physical Society March Meeting, Boston, MA, March 2019.
38. **G. O. Erol, E. Bachtar, A. Horowitz, N. Hibino, L. H. Romer, D. H. Gracias, and S. H. Kang**, “3D Printed Shape-Changing Cardiovascular Implants for Accommodating Growth,” ASME International Mechanical Engineering Congress and Exposition, Pittsburgh, PA, November 2018.
37. **S. Orrego, U. Krekora, D. Hou, E. Kang, S. H. Kang**, “Bioinspired materials with self-adaptable mechanical properties and self-regeneration by coupling mechanics and chemistry using soft stimuli-responsive scaffolds,” ASME International Mechanical Engineering Congress and Exposition, Pittsburgh, PA, November 2018.
36. **L. Fang, J. Li, Z. Zhu, and S. H. Kang**, “Piezoelectric polymer thin films with architected cuts for enhanced flexibility and ambient wind energy harvesting,” ASME International Mechanical Engineering Congress and Exposition, Pittsburgh, PA, November 2018.
35. **S. H. Kang, G. O. Erol, E. Bachtar, and A. Horowitz**, “Architected Cardiovascular Implants for Accommodating Growth,” IUTAM Symposium on Architected Materials, Chicago, IL, September 2018.
34. **L. Fang, J. Li, Z. Zhu, S. H. Kang**, “Piezoelectric polymer thin films with architected cuts,” European Solid Mechanics Conference, Bologna, Italy, July 2018.
33. **S. Orrego, U. Krekora, D. Hou, E. Kang, S. H. Kang**, “Bioinspired materials with self-adaptable mechanical properties and self-regeneration,” Gordon Research Conference (Bioinspired Materials), Les Diablerets, Switzerland, June 2018.
32. **J. Li, Z. Zhu, L. Fang, S. Guo, U. Erturun, Z. Zhu, J. E. West, S. Ghosh, and S. H. Kang**, “Analytical, numerical, and experimental studies of viscoelastic effects on the performance of soft piezoelectric nanocomposites,” 18th U.S. National Congress for Theoretical and Applied Mechanics, Chicago, IL, June 2018.
31. **S. Orrego, U. Krekora, E. Kang, and S. H. Kang**, “Bioinspired materials with self-adaptable mechanical properties and self-regeneration,” 2018 American Physical Society March Meeting, Los Angeles, CA, March 2018.
30. **S. Orrego, U. Krekora, E. Kang, and S. H. Kang**, “Bioinspired materials with self-adaptable mechanical properties and self-regeneration,” 7th International Conference on Mechanics of Biomaterials and Tissues, Waikoloa, HI, December 2017.
29. **J. Li, Z. Zhu, L. Fang, S. Guo, U. Erturun, Z. Zhu, J. E. West, S. Ghosh, and S. H. Kang**, “Viscoelastic Effects on the Performance of Soft Piezoelectric Nanocomposites,” ASME 2017 International Mechanical Engineering Congress, Tampa, FL, November 2017.
28. **S. H. Kang**, “A Bidirectional Self-Folding Actuator Based on Bilayer Shape Memory Polymers and Its Application to a Self-Folding Transformer,” ASME 2016 International Mechanical Engineering Congress, Phoenix, AZ, November 2016.
27. **S. H. Kang**, “Harnessing Deformation of Soft Materials for Multifunctionality,” Gordon Research Conference (Multifunctional Materials and Structures), Ventura, CA, February 2016.
26. **S. H. Kang, S. Shan, J. R. Raney, P. Wang, J. Lewis, and K. Bertoldi**, “Architected Materials for Reversible Trapping of Elastic Strain Energy,” Materials Research Society Fall Meeting, Boston, MA, December 2015.
25. **S. H. Kang, S. Shan, J. R. Raney, P. Wang, J. Lewis, and K. Bertoldi**, “Design and Fabrication of Shape-

Recoverable Energy-Absorbing Structures by Numerical Modeling and 3D Printing,” ASME 2015 International Mechanical Engineering Congress, Houston, TX, November 2015.

24. S. H. Kang, S. Shan, J. R. Raney, P. Wang, F. Candido, J. Lewis, and K. Bertoldi, “Harnessing Snapthrough Instability for Shape-Recoverable Energy-Absorbing Structure,” American Physical Society March Meeting, San Antonio, TX, March 2015.

23. S. H. Kang, S. Shan, F. Candido, and K. Bertoldi, “Shape Programmable Metamaterials,” Materials Research Society Meeting, San Francisco, CA, April 2014.

22. S. H. Kang, S. Shan, A. Kosmrlj, and K. Bertoldi, “Formation of Complex Ordered Patterns in Buckling Induced Geometrically Frustrated Triangular Cellular Structures,” Materials Research Society Meeting, San Francisco, CA, April 2014.

21. S. H. Kang, S. Shan, A. Kosmrlj, W. Noorduyn, S. Shian, D. R. Clarke, and K. Bertoldi, “Complex Ordered Patterns in Mechanical Instability Induced Geometrically Frustrated Triangular Cellular Structures,” American Physical Society March Meeting, Denver, CO, March 2014.

20. S. H. Kang, S. Shan, and K. Bertoldi, “Experiments, Modeling, and Analysis of Geometrically Frustrated Cellular Structures,” Materials Research Society Meeting, Boston, MA, December 2013.

19. S. H. Kang, S. Shan, A. Kosmrlj, and K. Bertoldi, “Formation of Three Ordered Patterns by Two-Step Bifurcation of Geometrically Frustrated Cellular Structures,” ASME 2013 International Mechanical Engineering Congress, San Diego, CA, November 2013.

18. S. H. Kang and J. Aizenberg, “Self-Organization of Polymer Nanofiber Arrays for Bioinspired Multifunctional Systems,” ASME 2013 International Mechanical Engineering Congress, San Diego, CA, November 2013.

17. S. H. Kang, S. Shan, A. Kosmrlj and K. Bertoldi, “Complex Patterns with Tunability by Coupling Mechanical Instability with Geometrical Frustration,” New England Workshop on the Mechanics of Materials and Structures, Boston, MA, October 2013.

16. S. H. Kang, S. Shan, and K. Bertoldi, “Formation of Complex Ordered Patterns by Harnessing Mechanical Instability in Geometrically Frustrated Lattices,” Society of Engineering Science 50<sup>th</sup> Annual Technical Meeting, Providence, RI, July 2013.

15. S. H. Kang, S. Shan, and K. Bertoldi, “Coupling Geometrical Frustration with Mechanical Instabilities to Design Surfaces with Three Dynamically Changing States,” American Physical Society March Meeting, Baltimore, MD, March 2013.

14. S. H. Kang, S. Shan, W. Noorduyn, M. Khan, K. Bertoldi, and J. Aizenberg, “Chiral Pattern Formation in Polymer-Based Supported Cellular Structures by Elastic Instability,” Materials Research Society Meeting, Boston, MA, November 2012.

13. S. H. Kang, N. Wu, A. Grinthal, and J. Aizenberg, “Capillary-Induced Self-Organization of Soft Pillar Arrays into Moiré Patterns by Dynamic Feedback Process,” American Physical Society March Meeting, Boston, MA, March 2012.

12. S. H. Kang, L. Mahadevan, and J. Aizenberg, “Pattern Formation by Self-Organization of Biologically-Inspired Fibrous Surfaces,” Growth and Form: Pattern Formation in Biology, Aspen, CO, January 2012.

11. S. H. Kang, S. Shan, W. Noorduyn, M. Khan, K. Bertoldi, and J. Aizenberg, “Instability-Induced Chiral Structure Formation in Surface-Attached Honeycombs,” Materials Research Society Meeting, Boston, MA,

November 2011.

10. S. H. Kang, S. Shan, W. Noorduyn, M. Khan, K. Bertoldi, and J. Aizenberg, “Buckling-Induced Chiral Pattern Formation in Rationally Designed Surface-Attached Honeycombs,” New England Workshop on the Mechanics of Materials and Structures, Cambridge, MA, October 2011.
9. T.-S. Wong, S. H. Kang, S.K.Y. Tang, and J. Aizenberg, “Robust Slippery Surfaces as Optically Transparent, Oleophobic, and Anti-icing Materials,” 14th Nano Science and Technology Institute (NSTI) Nanotech Conference and Expo, Boston, MA, June 2011.
8. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, “Self-Assembly of Nanofibers with Controlled Hierarchy and Shape by Adhesion Mediated Elastocapillary Interaction,” NSF Workshop and Freund Symposium on Frontiers of Mechanics Research, Providence, RI, June 2011.
7. S. H. Kang, N. Wu, L. Mahadevan, and J. Aizenberg, “Meniscus Lithography: Using Moiré Effect for Controlling Self-Assembly by Evaporation,” New England Complex Fluid Meeting, New Haven, CT, March 2011.
6. S. H. Kang, N. Wu, and J. Aizenberg, “Controlling Hierarchical Self-Assembly of Polymer Bristles by Manipulating Meniscus Movement,” Materials Research Society Meeting, Boston, MA, November 2010.
5. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, “Dynamic Wetting of Soft Fibrous Surface,” Faraday Discussion 146 - Wetting, Richmond, VA, April 2010.
4. S. H. Kang, N. Wu, L. Mahadevan, and J. Aizenberg, “Fine Tuning of Pattern Formation in Evaporation-Induced Self-Assembly of Polymer Bristles,” Materials Research Society Meeting, San Francisco, CA, April 2010.
3. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, “Controlled Assembly of Biologically Inspired Arrays of Polymeric Fibers: Potential Applications,” Materials Research Society Meeting, Boston, MA, November 2009.
2. S. H. Kang, N. Wu, and J. Aizenberg, “Effects of Meniscus Formation and Movement on Self-Assembly of Polymer Post Arrays,” Kavli Institute, Cambridge, MA, November 2009.
1. S. H. Kang, B. Pokroy, L. Mahadevan, and J. Aizenberg, “Capillary Induced Chiral Self-Organization of High Aspect Ratio Polymeric Nanoposts: Investigating the Effects of Geometry and Elasticity,” Gordon Research Conference (Soft Condensed Matter Physics), New London, NH, August 2009.

## **PROFESSIONAL SOCIETIES AND SERVICE**

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**Early Career Researcher Board Member** – Multifunctional Materials 2020-2021

**Editorial Board Member** – Sensors (August 2020-July 2022), Scientific Reports (November 2014-October 2017)  
**Guest Editor** – Special Issue on Soft Composite-Based Sensor of journal Sensors (2021), February 2016 issue of Materials Research Society Bulletin (“Beyond Conventional Lithography: Patterning via Self-Organization and Self-Folding”).

**Member** - American Society of Mechanical Engineers, Materials Research Society, Society of Engineering Science, American Physical Society.

**Journal Reviewer** – Nature, Science, Advanced Materials, Science Advances, Science Robotics, Advanced Functional Materials, Proceedings of the National Academy of Sciences, ACS Applied Materials & Interfaces, Additive Manufacturing, Nanoscale, Applied Energy, Chemical Engineering Journal, ACS Applied Energy Materials, Journal of the Mechanics and Physics of Solids, Extreme Mechanics Letters, Journal of Applied



Mechanics, International Journal of Solids and Structures, Journal of Mechanics of Materials and Structures, Soft Matter, Composites Part A, Advanced Composite Materials, Matter, Smart Materials and Structures, Bioinspiration & Biomimetics, Advanced Materials Technologies, Advanced Engineering Materials, Regenerative Engineering and Translational Medicine, ACS Applied Polymer Materials, Materials and Design, Journal of Applied Polymer Science, 3D Printing and Additive Manufacturing, Journal of Mechanical Design, Langmuir, Applied Physics Letters, Micromachines, MRS Advances, Research.

2021 (total 10 times): Advanced Materials (5), Additive Manufacturing (2), Matter (2), Extreme Mechanics Letters (1)

2020 (total 32 times): Nature (2), Advanced Materials (9), Science Robotics (2), Advanced Functional Materials (1), PNAS (2), Additive Manufacturing (1), ACS Applied Materials and Interfaces (2), Extreme Mechanics Letters (1), Journal of Applied Mechanics (1), Chemical Engineering Journal (2), Advanced Engineering Materials (2), Journal of Materials Chemistry-C (1), ACS Applied Polymer Materials (2), Research (2), Polymer International (2)

2019 (total 16 times): Nature (1), Advanced Materials (1), Advanced Functional Materials (1), Applied Energy (1), Extreme Mechanics Letters (3), ACS Applied Materials and Interfaces (2), ACS Energy Materials (2), NANO (1), 3D Printing and Additive Manufacturing (1), Advanced Composite Materials (1), Materials Design (1), Regenerative Engineering (1)

2018 (total 12 times): Nature (1), Science Advances (1), Applied Energy (2), Journal of Mechanics and Physics of Solids (2), Extreme Mechanics Letters (1), Nano Letters (1), Soft Matter (1), Langmuir (2), Journal of Applied Polymer Science (1), ACS Book Chapter (1)

2017 (total 15 times): Science (2), Advanced Materials (2), Science Advances (1), ACS Materials and Interfaces (2), Applied Physics Letters (1), International Journal of Solids and Structures (2), Composite A (2), Bioinspiration (1), Journal of Mechanical Design (1), Advanced Materials and Technologies (1)

2016 (total 10 times): Advanced Materials (2), Science Advances (2), ACS Materials and Interfaces (1), Bioinspiration (2), Smart Materials and Structures (1), Advanced Materials Technology (1), Micromachines (2)

2015 (total 6 times): Advanced Materials (4), Journal of Mechanical Design (1), Materials Advance (1)

**Proposal Reviewer** - National Science Foundation (3 times), Army Research Office (2 times), American Chemical Society Petroleum Research Fund (3 times), Fonds de recherche du Québec (1 time).

**University Ranking Survey Invitee** – 2021, 2020, 2018, 2017 QS Global Academic Survey

#### **Invited Workshop Attendee**

Invitee, Department of Energy, Advanced Research Projects Agency-Energy (ARPA-E) - <i>Bioinspired Design Workshop</i>	December 2019
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Invitee, China-America Frontiers of Engineering Symposium - <i>60 early-career engineers from Chinese and US universities, industry, and government are invited to facilitate international cooperation and understanding.</i>	June 2019
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ARO Workshop on the Future of Vibration Energy Transfer in Solids and Structures	October 2016
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Invitee, National Academy of Engineering's US Frontiers of Engineering Symposium - <i>100 engineers, generally 30-45 years old from industry, universities, and government labs are invited to represent the full range of engineering fields.</i>	September 2016
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NSF Workshop on Interdisciplinary Frontiers of Designing Engineering Material Systems	July 2016
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**Professional Society Technical Committee Leadership** - Chair (2020), Vice Chair (2019), Secretary (2018), Editor (2017), ASME Technical Committee on Mechanics of Soft Materials

**Scientific Committee Membership** – Member of the Polymer Scientific Committee for the National Institute of Standards and Technology (NIST) AM-Bench 2021: Additive Manufacturing Benchmark Test Series

**Conference Track Co-Chair**

Society of Engineering Science Annual Meeting – Track on Frontiers in Mechanics of Materials 2020, 2021

**Conference Symposium Co-Organizer** (34 symposia)

Materials Research Society Fall Meeting 2021

– Additive Manufacturing: From Material Design to Emerging Applications

American Physical Society March Meeting – Focus Session on Mechanical Metamaterials 2021

American Physical Society March Meeting – Focus Session on Physics of Bioinspired Materials 2021

American Physical Society March Meeting – Focus Session on Mechanical Metamaterials 2020

Multiscale Materials Modeling – Multiscale Modeling of Polymers and Soft Materials 2020

Society of Engineering Science Annual Meeting – Mechanics and Physics of Soft Materials 2020

Society of Engineering Science Annual Meeting – 3D/4D Printed Materials 2020

ASME International Mechanical Engineering Congress & Exposition – Mechanics of Soft Materials 2020

ASME International Mechanical Engineering Congress & Exposition – 3D Printed Soft Materials 2020

ASME International Mechanical Engineering Congress & Exposition – Mechanical Metamaterials 2020

Materials Research Society Fall Meeting – Lessons from Nature: From Biology to Bioinspired Materials 2020

American Physical Society March Meeting – Focus Session on Mechanical Metamaterials 2019

American Physical Society March Meeting – Focus Session on Physics of Bioinspired Materials 2019

ASME International Mechanical Engineering Congress & Exposition – Mechanics of Soft Materials 2019

ASME International Mechanical Engineering Congress & Exposition – Mechanical Metamaterials 2019

ASME International Mechanical Engineering Congress & Exposition – 3D Printed Soft Materials 2019

Society of Engineering Science Annual Meeting – 3D/4D printed functional materials and structures 2019

Society of Engineering Science Annual Meeting – Mechanical Metamaterials 2019

Society of Engineering Science Annual Meeting – Mechanics and Physics of Soft Materials 2019

American Physical Society March Meeting – Focus Session on Mechanical Metamaterials 2018

American Physical Society March Meeting – Focus Session on Physics of Bioinspired Materials 2018

American Physical Society March Meeting 2018

- Invited Session on Lessons from Biological Soft Materials and Their Applications

ASME International Mechanical Engineering Congress & Exposition – Mechanics of Soft Materials 2018

ASME International Mechanical Engineering Congress & Exposition – Mechanical Metamaterials 2018

ASME International Mechanical Engineering Congress & Exposition – 3D Printed Soft Materials 2018

U.S. National Congress for Theoretical and Applied Mechanics 2018

- Mechanics and Physics of Soft Materials: Instability and Manufacturing of Soft Materials

U.S. National Congress for Theoretical and Applied Mechanics 2018

- Mechanics and Physics of Soft Materials: Soft Active Materials

American Physical Society March Meeting - Focus Session on Physics of Bioinspired Materials 2017

Society of Engineering Science Annual Meeting - Mechanics of 3D Printed Materials and Structures 2017

ASME International Mechanical Engineering Congress & Exposition – Mechanics of Soft Materials 2017

ASME International Mechanical Engineering Congress & Exposition – Mechanical Metamaterials 2017

American Physical Society March Meeting – Focus Session on Physics of Bioinspired Materials 2016

Society of Engineering Science Annual Meeting - Mechanics of 3D Printed Materials and Structures 2016

ASME International Mechanical Engineering Congress & Exposition - 3D Printed Soft Materials 2016

## **SERVICE FOR UNIVERSITY, DEPARTMENT AND INSTITUTE**

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**Johns Hopkins Dept. of Medicine-Whiting School of Engineering Retreat Award Committee** January 2021  
**Johns Hopkins University Commencement Marshal** May 2018  
**5<sup>th</sup> Annual Johns Hopkins Postdoctoral Retreat Oral Presentation Competition Judge** May 2018  
**Johns Hopkins Institute for NanoBioTechnology Annual Symposium Poster Competition Judge** May 2018  
**Faculty Mentoring Focus Group – Whiting School of Engineering** May 2015

**Department Committee** 2015-Present  
 ME Seminar Series & Course (Chair), Graduate Admission Committee (Member), Manufacturing Engineering ad hoc Committee (Member), Design Course ad hoc Committee (Member), Siebel Scholarship ad hoc Committee (Member)

**Hopkins Extreme Materials Institute Committee** 2015-Present  
 HEMI Seminar Committee (Chair), Academic Committee (Member)

### **Thesis Committee Member**

Mr. Lichen Fang (Ph.D. candidate in Mechanical Engineering) April 2020  
 “Characterization and Optimization of Geometrical Accuracy and Mechanical Properties of Specimens Prepared by Fused Filament Fabrication”

Mr. Philip Dorsey (Ph.D. candidate in Chemical and Biomolecular Engineering) January 2020  
 “Towards spatial computing and chemical information storage in soft materials using DNA Programming”

Mr. Wangqu Liu (MSE candidate in Chemical and Biomolecular Engineering) July 2019  
 “3D printing of multi-functional hydrogels”

Mr. Jiayu Liu (Ph.D. candidate in Mechanical Engineering) May 2019  
 “Mechanics-based design of stimuli-responsive hydrogel structures and devices”

Ms. Wenlu Wang (MSE candidate in Chemical and Biomolecular Engineering) May 2019  
 “A digital maskless photolithographic patterning method for UV-photocleavable PEGDA hydrogels with a camphorquinone-triethanolamine photoinitiator”

Mr. Philip Dorsey (Ph.D. candidate in Chemical and Biomolecular Engineering) 2018, 2019

Mr. Angelo Cangialosi (Ph.D. candidate in Chemical and Biomolecular Engineering) May 2018  
 “DNA Programmable Soft Matter Devices”

Mr. Zhiren Zhu (MSE candidate in Civil Engineering) August 2017  
 “Computational Analysis of Piezoelectric Systems Using a Coupled Multiphysics Finite Element Model”

Mr. Shu Guo (Ph.D. candidate in Civil Engineering) April 2017  
 “A Coupled Multi-physics Analysis Model for Integrating Transient Electro-Magnetics and Structural Dynamic Fields with Damage”

Mr. Xiaotong Fu (Ph.D. candidate in Chemical and Biomolecular Engineering) December 2016  
 “A New Platform For Microfluidic Sample Preparation Using On-Chip Electrokinetics”

Mr. Charles Dhong (Ph.D. candidate in Chemical and Biomolecular Engineering) October 2016  
“Peeling Structured Surfaces in Viscous Environments: The Role of Deformation and Drainage Channels”

Mr. Longyu Zhao (Ph.D. candidate in Materials Science) February 2016-April 2016  
“Design and Characterization of Fluidic and Thermal Properties of 3D Woven Lattice Materials for Heat Exchange Applications”

Ms. Barbara Murienne (Ph.D. candidate in Mechanical Engineering) January-March 2016  
“Glycosaminoglycan Contribution to the Structure-Mechanical Properties of the Posterior Sclera”

Mr. ChangKyu Yoon (Ph.D. candidate in Materials Science) May 2015-December 2016  
“Design, Characterization & Application of Stimuli Responsive Self-Folding Soft Microsystems”

### **Graduate Board Oral Examination Committee Member**

Mr. Chaojun Cheng (Ph.D. candidate in Mechanical Engineering) September 2020

Ms. Julia Carrol (Ph.D. candidate in Civil Engineering) February 2020

Ms. Sirui Bi (Ph.D. candidate in Civil Engineering) October 2019

Ms. Wei-Hung Jung (Ph.D. candidate in Mechanical Engineering) July 2019

Ms. Valerie Rennoll (Ph.D. candidate in Electrical and Computer Engineering) June 2019

Ms. Makeda Stephenson (Ph.D. candidate in Biomedical Engineering) May 2019

Mr. Mikhail Osanov (Ph.D. candidate in Civil Engineering) September 2018

Ms. May Thu Nwe Nwe (Ph.D. candidate in Civil Engineering) September 2018

Mr. Jiayu Liu (Ph.D. candidate in Mechanical Engineering) May 2018

Mr. Angelo Cangialosi (Ph.D. candidate in Chemical and Biomolecular Engineering) May 2018

Mr. Raleigh Linville (Ph.D. candidate in Biomedical Engineering) June 2017

Ms. Fatma Madouh (Ph.D. candidate in Mechanical Engineering) May, October 2017

Mr. Reza Yaghmaie (Ph.D. candidate in Civil Engineering) September 2016

Ms. Hahn Le (Ph.D. candidate in Electrical and Computer Engineering) August 2016

Mr. Longyu Zhao (Ph.D. candidate in Materials Science) April 2016

Mr. Gyeongwoo Cheon (Ph.D. candidate in Electrical and Computer Engineering) May 2015

### **STUDENT MENTORING AND ADVISING**

**Johns Hopkins University** Baltimore, MD

#### **[Postdoctoral Fellow]**

Dr. Seung-Yeol Jeon, Department of Mechanical Engineering October 2017-February 2020

- *Currently, Senior Scientist at Korea Institute of Science and Technology*

Dr. Galip Ozan Erol, Department of Mechanical Engineering June 2017-May 2019

- *Currently, New Product Development Technologist at W. L. Gore & Associates*

Dr. Santiago Orrego, Department of Mechanical Engineering May 2015-April 2018

- *Currently, Assistant Professor at Temple University*

#### **[Doctoral Students]**

Mostafa Omar, Department of Mechanical Engineering (3 <sup>rd</sup> yr)	Fall 2020-Present
- co-advised with Prof. Jaafar El-Awady (Dept. of Mechanical Engineering)	
Tessa Van Volkenburg, Doctor of Engineering (1 <sup>st</sup> year)	Summer 2020-Present
Adebayo Eisape, Department of Electrical and Computer Engineering (3 <sup>rd</sup> yr)	Fall 2019-Present
- Microsoft PhD Fellow, co-advised with Prof. James West (Dept. of Electrical and Computer Engineering)	
Bohan Sun, Department of Mechanical Engineering (2 <sup>nd</sup> yr)	Fall 2019-Present
Beijun Shen, Department of Mechanical Engineering (2 <sup>nd</sup> yr)	Fall 2019-Present
- co-advised with Prof. Vicky Nguyen (Dept. of Mechanical Engineering)	
Lichen Fang, Department of Mechanical Engineering	Fall 2015-Summer 2020
- <i>Currently, Product Design Engineer at Apple</i>	

### [Master Students]

Fanzhen Ding, Department of Mechanical Engineering	Fall 2020-Present
Zixuan Wang, Department of Biomedical Engineering	Fall 2020-Present
Yihe Wang, Department of Mechanical Engineering	Summer 2020-Present
Runhan Tao, Department of Biomedical Engineering	Spring 2019-Spring 2021
Shengyu Yao, Department of Mechanical Engineering	Fall 2018-Spring 2020
- <i>Currently, Display Mechanical Engineer at Apple</i>	
Zhezhi Chen, Department of Mechanical Engineering	Fall 2019-Spring 2020
- <i>Currently, Design for Reliability Engineer at Huawei Consumer Business Group</i>	
Decheng Hu, Department of Mechanical Engineering	Fall 2017-Spring 2020
- <i>Currently, PhD student at Lehigh University</i>	
Shichen Xu, Department of Mechanical Engineering	Fall 2017-Fall 2019
- <i>Currently, Design Engineer at Access Point</i>	
Boliang Wu, Department of Mechanical Engineering	Fall 2017-Spring 2019
- <i>Currently, PhD student at University of California, Los Angeles</i>	
Yishu Yan, Department of Mechanical Engineering	Fall 2017-Spring 2019
- <i>Currently, PhD student at University of California, Berkeley</i>	
Zeyu Zhu, Department of Mechanical Engineering	Fall 2017-Fall 2019
- <i>Currently, Engineer at Nanova Biomaterials</i>	
Junjie Pan, Department of Mechanical Engineering	Fall 2017-Fall 2019
- <i>Currently, Mechanical engineer at Galen Robotics</i>	
Emilio Bachtar, Department of Mechanical Engineering	Fall 2016-Spring 2018
- <i>Currently, PhD student at Duke University</i>	
Azra Horowitz, Department of Biomedical Engineering	Fall 2016-Spring 2018
- <i>Currently, Engineer at Cornell Medical Center</i>	
Mohit Singhala, Center for Bioengineering Innovation and Design	Fall 2016-Spring 2017

- *Currently, PhD student at Johns Hopkins University*  
Shuyang Chen, Department of Mechanical Engineering January 2015-May 2016  
- *Currently, PhD student at Rensselaer Polytechnic Institute*  
Rui (Olivia) Wang, Department Materials Science and Engineering Spring 2015-Summer 2015  
- *Currently, engineer at IBM*

### **[Undergraduate Students]**

Jaeho Lee, Department of Mechanical Engineering Summer 2020-Present  
Christopher Shallal, Department of Biomedical Engineering Spring 2020-Present  
Mitchell Simmons, Department of Materials Science and Engineering Fall 2021-Present  
Madeline Scott, Department of Math Fall 2020  
Jungin Kim, Department of Mechanical Engineering Fall 2019-Spring 2020  
Bohan Zhang, Department of Chemistry and Economics Fall 2019-Spring 2020  
Rebecca Grusby, Department of Chemical and Biomolecular Engineering Spring 2018-Spring 2019  
- *Currently, United States Patent and Trademark Office Incoming Patent Examiner*  
Daniel Wang, Department of Mechanical Engineering Spring 2018-Spring 2019  
Urszula Krekora, Department of Chemical and Biomolecular Engineering Spring 2016-Spring 2019  
- *Currently, Master student at Duke University*  
Khalid Elawad, Department of Materials Science and Engineering Fall 2016-Spring 2019  
- *Currently, Master student at Johns Hopkins University*  
Mohid Khan, Department of Mechanical Engineering Fall 2017-Spring 2020  
- *Deans List for Fall 2017 and Spring 2018*  
Franz O'Malley, Department of Mechanical Engineering Fall 2017-Present  
- *Deans List for Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019*  
Stephen Schmidt, Department of Mechanical Engineering Fall 2017-Present  
Rachel Swanstrom, Department of Mechanical Engineering Fall 2017-Present  
- *Deans List for Fall 2017 and Spring 2018*  
Gabriel Yuen, Department of Mechanical Engineering Fall 2017-Fall 2018  
Anna Burkholder, Department of Mechanical Engineering Fall 2017-Spring 2018  
Tara Foley, Department of Mechanical Engineering Fall 2017-Spring 2018  
- *Deans List for Fall 2017 and Spring 2018*  
Darius Irani, Department of Mechanical Engineering Spring 2017  
Eugene Kang, Department of Mechanical Engineering Summer 2016-Spring 2017  
- *Currently, Engineer at Lockheed Martin*  
Amy Boulter, Department of Mechanical Engineering Fall 2016-Spring 2017  
- *Currently, R&D Engineer in Engineering Leadership Development Program at Reynolds Consumer Products*  
Arion Morshedjian, Department of Mechanical Engineering Fall 2016-Spring 2017

Eyan Goldman, Department of Mechanical Engineering	Fall 2016-Spring 2017
Sofia Diez, Department of Mechanical Engineering	June-August 2016
<i>- Currently, Engineer Consultant at Booz Allen Hamilton</i>	
Brett Caggiano, Department of Mechanical Engineering	June-August 2016
<i>- Currently, Technical Service Specialist, St. Jude Medical</i>	

### [Visiting Students]

Hyo Eun Kim (Master student from Sungkyunkwan University)	Spring 2021
Chao Xie (Undergraduate student from Xi'an Jiaotong University)	Spring 2020-Fall 2020
G V Sai Harshit (Undergraduate student from Indian Institute of Technology, Kharagpur)	Summer 2020-Fall 2020
Gun Oh (PhD student from Sungkyunkwan University)	Spring 2020-Summer 2020
Woo Jun Jung (Master student from Sungkyunkwan University)	Spring 2020-Summer 2020
Yoobin Han (Undergraduate student from Seoul National University)	September 2019-December 2019
Zongyi Jiang (Undergraduate student from Shichuan University)	July 2019-September 2019
O-Chang Kwon (PhD student from Korea University)	December 2018-March 2019
Somnath Sandeep (Undergraduate student from Birla Institute of Technology and Science)	July 2018-Jan. 2019
Binjie Li (Undergraduate student from Zhejiang University)	July-September 2018
<i>- Currently, MSE student at Duke University</i>	
Prashanth Ray (Undergraduate student from Visvesvaraya National Institute of Technology)	May-July 2018
Shangtong Li (Undergraduate student from Maryland Institute College of Art)	May-August 2018
<i>- Currently, Facilities Technician/Design Associate at DiPole Materials</i>	
Jiaxin Xu (Undergraduate student from University of Nottingham, Ningbo, China)	July 2017-December 2017
Jing Li (PhD student from Wuhan University of Technology)	September 2015-August 2017
Shaoyang Qu (Undergraduate student from Tsinghua University)	July 2017-September 2017
<i>- Currently, PhD student at Purdue University</i>	
Junjie Pan (Undergraduate student from Chongqing University <sup>[17]</sup> )	January 2017-May 2017
<i>- Currently, Mechanical Engineer at Galen Robotics</i>	
Bohan Wang (Undergraduate student from Tsinghua University)	July 2016-January 2017
<i>- Currently, PhD student at Georgia Institute of Technology</i>	
Peisheng He (Undergraduate student from Shanghai Jia Tong University)	September 2016-January 2017
<i>- Currently, PhD student at University of Berkeley</i>	
Moses Kayondo (HEMI Extreme Science intern from Morgan State University)	June-August 2015, 2016
Tila Assgari (HEMI Extreme Arts intern from Maryland Institute College of Art)	June-August 2016
Yancheng Du (Undergraduate student from Tsinghua University)	July-August 2016
<i>- Currently, PhD student at Purdue University</i>	
Zeyu Zhu (Undergraduate student from Shanghai Jia Tong University)	July-September 2016
<i>- Currently, Engineer at Nanova Biomaterials</i>	
Bo Yuan (Undergraduate student from Tsinghua University)	October 2015-February 2016
<i>- Currently, PhD student at Tsinghua University</i>	

Liujiang Yan (Undergraduate student from Tsinghua University) - <i>Currently, MSE student at Johns Hopkins University</i>	July-August 2015
Amanda Metcalf (HEMI Extreme Arts intern from Maryland Institute College of Art)	June-August 2015
Daksh Arora (Undergraduate student from Indian Institute of Technology, Delhi) - <i>Currently, Stress Analyst at Honda Aircraft</i>	May-July 2015
Dharmendra Sharma (Undergraduate student from Indian Institute of Technology, Kharagpur) - <i>Currently, Associate Consultant at Ernst &amp; Young LLP</i>	May-July 2015

### **[High School Students]**

Arthur Zhu (Princeton Day School)	Jan 2020-Present
Elaine Nagahara (Poolesville Magnet High School) - <i>Currently, Undergraduate student at Johns Hopkins University</i>	June-August 2019

## **OUTREACH**

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<b>Johns Hopkins University</b>	Baltimore, MD
Host for the visit of students and teachers from Joint Science and Technology Institute - Gave lectures, lab tours, and demos for middle and high school students, teachers and staffs from a DoD STEM Summer program	July 2018, August 2017

Invited speaker at the Center for Education Outreach - Gave lectures on 3D printing for high school students	June 2017, July 2016
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Host for the visit of students and parents participating Summer program at Center for Talented Youth July 2017

<b>Museum of Science, Boston</b>	Boston, MA
Volunteer for Nano Days - Conducted interactive hands-on demonstration of nanoscience for general public of various age groups.	April 2013, March 2011 & 2010

Park Street School/Park Street Kids	<b>Boston, MA</b>
Mentor for the annual science fair of the Park Street School - Helped two sixth grade students to formulate problems, design experiments, and analyze results.	January-February 2014

Volunteer for a preschool class - Conducted interactive hands-on science demonstrations for sixteen preschool students and teachers.	March 2012
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## **TEACHING**

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<b>Johns Hopkins University</b>	Baltimore, MD
Instructor for EN. 530.618 Fabricatology – Advanced Materials Processing - Teaches graduate course on fabrication. - 8 students with various majors (mechanical engineering, biomedical engineering, materials science and engineering) enrolled.	Spring 2021
Instructor for EN 530.436 Bioinspired Science and Technology - Teaches an undergraduate course on bioinspired science and technology. - 25 students with various majors (mathematics, biomedical engineering, mechanical engineering, chemical and biomolecular engineering, materials science and engineering) are enrolled.	Fall 2020
Instructor for EN. 530.417/618 Fabricatology – Advanced Materials Processing	Spring 2020



- Taught undergraduate/graduate course on fabrication.
- 20 students with various majors (mechanical engineering, engineering management, chemical and biomolecular engineering, materials science, medicine, science and the humanities) enrolled.

Instructor for EN 530.436/636 Bioinspired Science and Technology	Fall 2019
<ul style="list-style-type: none"> <li>- Redeveloped an undergraduate/graduate course on bioinspired science and technology.</li> <li>- 32 students with various majors (biomedical engineering, mechanical engineering, chemical and biomolecular engineering) are enrolled.</li> </ul>	
Instructor for EN. 530.618 Fabricatology – Advanced Materials Processing	Spring 2019
<ul style="list-style-type: none"> <li>- Taught graduate course on fabrication.</li> <li>- 8 students with various majors (mechanical engineering, biomedical engineering, engineering management, chemical and biomolecular engineering, electrical engineering) enrolled.</li> </ul>	
Instructor for EN. 530.809 Mechanics of Materials and Structures Graduate Seminar	Spring 2019
<ul style="list-style-type: none"> <li>- Guided the mechanics of materials and structures graduate student seminar series.</li> <li>- 40 students from mechanical engineering enrolled.</li> </ul>	
Instructor for EN. 530.352 Materials Selection	Fall 2018
<ul style="list-style-type: none"> <li>- Taught undergraduate core course on materials selection.</li> <li>- 45 students from mechanical engineering enrolled.</li> </ul>	
Instructor for EN. 530.417/618 Fabricatology – Advanced Materials Processing	Spring 2018
<ul style="list-style-type: none"> <li>- Taught undergraduate/graduate course on fabrication.</li> <li>- 23 students with various majors (mechanical engineering, engineering management, chemical biomolecular engineering, chemistry) enrolled.</li> </ul>	
Instructor for EN. 530.809 Mechanics of Materials and Structures Graduate Seminar	Spring 2018
<ul style="list-style-type: none"> <li>- Guided the mechanics of materials and structures graduate student seminar series.</li> <li>- 44 students from mechanical engineering enrolled.</li> </ul>	
Instructor for EN. 530.352 Materials Selection	Fall 2017
<ul style="list-style-type: none"> <li>- Taught undergraduate core course on materials selection.</li> <li>- 35 students from mechanical engineering enrolled.</li> </ul>	
Instructor for EN. 530.809 Mechanics of Materials and Structures Graduate Seminar	Fall 2017
<ul style="list-style-type: none"> <li>- Guided the mechanics of materials and structures graduate student seminar series.</li> <li>- 40 students from mechanical engineering enrolled.</li> </ul>	
Instructor for EN. 530.417/618 Fabricatology – Advanced Materials Processing	Spring 2017
<ul style="list-style-type: none"> <li>- Taught undergraduate/graduate course on fabrication.</li> <li>- 31 students with various majors (mechanical engineering, engineering management, chemical biomolecular engineering, biomedical engineering, electrical engineering) enrolled.</li> </ul>	
Instructor for EN 530.436/636 Bioinspired Science and Technology	Fall 2016
<ul style="list-style-type: none"> <li>- Developed a new undergraduate/graduate course on bioinspired science and technology.</li> <li>- 42 students with various majors (mechanical engineering, engineering management, biomedical engineering) are enrolled.</li> </ul>	
Instructor for EN. 530.417/618 Fabricatology – Advanced Materials Processing	Spring 2016
<ul style="list-style-type: none"> <li>- Taught undergraduate/graduate course on fabrication.</li> <li>- 20 students with various majors (mechanical engineering, engineering management, biomedical engineering) enrolled.</li> </ul>	
Instructor for EN. 530.618 Fabricatology – Advanced Materials Processing	Spring 2015

- Developed a new graduate course on fabrication.
- 24 students with various majors (mechanical engineering, engineering management, materials science, civil engineering) enrolled.

## FUNDING

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**Air Force Office of Scientific Research (PI)** Jan. 2018-Jan. 2022

- *Bioinspired Synthesis of Multifunctional Materials with Self-Adaptable Mechanical Properties and Self-regeneration*. Total award: \$450,000 (\$450,000 for Sung Hoon Kang)

**Maryland Innovation Initiative (PI, Co-PIs: Justin Sacks, Gerald Brandacher, Caitlin Hicks)** Jan-Dec 2021

- *Vaso-Lock: Replacing Sutures for Faster, Easier and Safer Microvascular and Vascular Anastomosis*. Total award: \$115,000 (\$82,820 for Sung Hoon Kang)

**Bisciotti Foundation Translational Fund (PI, Co-PIs: J. Sacks, G. Brandacher, C. Hicks)** Mar-Dec 2021

- *Vaso-Lock: Replacing Sutures for Faster, Easier and Safer Microvascular and Vascular Anastomosis*. Total award: \$50,000 (\$39,122 for Sung Hoon Kang)

**Cohen Foundation Translational Engineering Grant (PI, Co-PIs: J. Sacks, G. Brandacher, C. Hicks)**

Mar. 2020-Jun. 2021

- *Vaso-Lock: A 3D Printed Coupling Device for Microvascular Anastomosis*. Total award: \$100,000 (\$42,506 for Sung Hoon Kang)

**Johns Hopkins Catalyst Award (PI)**

Dec. 2020-Dec. 2022

- *Reprogrammable Architected Materials: Decoupling Form From Functions*. Total award: \$75,000 (\$75,000 for Sung Hoon Kang)

**Johns Hopkins President's Initiative on Covid-19 Medical Supply Innovation (PI, Co-PIs: Julie Caffrey, Jamie Guest)**

Apr. 2020

- *A Bioinspired Ventilator Splitter*. Total award: \$25,000 (\$25,000 for Sung Hoon Kang)

**National Science Foundation DMREF Program (PI: Thao (Vicky) Nguyen, Co-PIs: Sung Hoon Kang, Kevin Hemker, Mark Robinson, Peter Olmsted)**

Sep. 2016-Aug. 2021

- *Predictive Multiscale Modeling of the Mechanical Properties of Polymers 3D Printed Using Fused Filament Fabrication*. Total award: \$1,754,990 (\$395,393 for Sung Hoon Kang)

**Army Research Office (PI: Thao (Vicky) Nguyen, co PI: Sung Hoon Kang, Christopher Yackacki)**

May 2017-Apr. 2021

- *Extreme Dissipation Behavior of Main-Chain Liquid-Crystal Elastomers and Structures*. Total award: \$588,585 (\$49,099 for Sung Hoon Kang)

**Office of Naval Research (PI: Zhiyong Xia, subcontractors: Sung Hoon Kang, James MacMahan)**

Aug. 2019-May 2021

- *Cost Effective Soft Sensors*. Total award: \$671,356 (\$100,000 for Sung Hoon Kang)

**Johns Hopkins University Discovery Grant (PI: Rajat Mittal, co PIs: Sung Hoon Kang, Cynthia Moss, James West)**

Aug. 2019-Jun. 2021

- *Decoding the Biomechanics and Physics of Cetacean Biosonar*. Total award: \$100,000 (\$25,000 for Sung Hoon Kang)

**National Institute of Health, R21/R33 Grant (PI: David Gracias, co PIs: Sung Hoon Kang, Lewis Romer, Narutoshi Hibino)**

Dec. 2016-Nov. 2018

- *Self-Unfolding RV-PA 3D Printed Conduits*. Total award: \$237,231 (\$132,806 for Sung Hoon Kang)

**Johns Hopkins Environment, Energy, Sustainability & Health Institute (PI: Rajat Mittal, co PIs: Sung Hoon Kang, Kourosh Shoele)** Jul. 2015-Jun. 2016  
- *Harvesting Energy from Flow-Induced Flutter of 'Piezoleaves' for Self-Powered Sensors*. Total award: \$25,000 (\$12,500 for Sung Hoon Kang)