

Curriculum Vitae

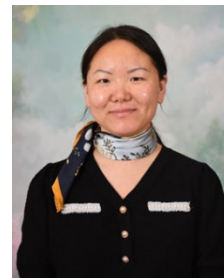
Lihua Lou, Ph.D.

Address: 219 Fluor Daniel Building

Clemson University, Clemson, SC 29634-0921

E-mail: llou@clemson.edu | Phone: 864-656-5631

Google Scholar: [Lihua Lou - Google Scholar](#)



Appointment

2024/08 – Present	Department of Mechanical Engineering Clemson University, Clemson, US <i>Assistant Professor</i>
2023/09 – 2024/08	Department of Mechanical and Materials Engineering Florida International University, Miami, US <i>Research Assistant Professor</i> Supervisor: Arvind Agarwal, Ph.D.
2020/10 – 2023/09	Department of Mechanical and Materials Engineering Florida International University, Miami, US <i>Postdoc Associate</i> Advisor: Arvind Agarwal, Ph.D.
2020/01 – 2020/10	School of Pharmacy Virginia Commonwealth University, Virginia, US <i>Postdoc Fellow</i> Advisor: Qingguo Xu, Ph.D.

Education

2016/08 – 2019/12	Ph.D., Department of Environmental Toxicology, Texas Tech University, Texas, US Advisor: Seshadri Ramkumar, Ph.D.
2013/09 – 2016/03	M.E., Textile Materials and Textile Design, Donghua University Shanghai, China Advisor: Xiaohong Qin, Ph.D.
2009/09 – 2013/07	B.E., Textile Materials and Textile Design, Henan Institute of Engineering, Henan, China Advisor: Rong Zhou, Ph.D.

Expertise and Research Interest

Keywords: *biomanufacturing, nanomaterials, nanomechanics, nanocomposites manufacturing/applications, cardiac bioengineering*

My research interests are dynamic and broad crossing disciplines, spanning from 1) multiscale soft material mechanics and viscoelasticity to 2) in-situ mechanical and functional characterization of 1D/2D/3D materials to 3) functional nanocomposites' fabrications and applications.

Honors and Awards (2014-present)

2023	2023 Florida Heart Research Foundation stop heart disease “Early Career Research of the Year” Award
2023	FIU Postdoctoral Scholar Travel Awards
2023	<i>Journal of Biomaterials</i> , Editorial Board
2022	CELL-MET Industry Days Perfect Pitch Competition 1 st Price
2022	FIU Postdoctoral Scholar Travel Awards
2019	Graduate Student Research Award, Texas Tech University
2019	Love of Learning Award, Phi Kappa Phi
2019	Summer Thesis Scholarship, Texas Tech University
2019	Graduate School Travel Award, Texas Tech University
2019	Study Abroad Scholarship, Texas Tech University
2018	Terracon Funding, Terracon
2017	AATCC Research Scholarship
2016	Outstanding Graduate Students in Donghua University
2015	Ninth International Innovation Forum of Textile & Clothing Excellent Paper
2015	Donghua University Scientific Award (EG2015005)
2015	Graduate National Scholarship, China
2015	Shanghai International Textile Graduate Summer School Certificate of Honor
2015	3 rd Prize 11 th National Graduate Student Mathematical Modeling Competition
2015	Donghua University Outstanding Student
2014	Uster Prize, Donghua University

Research Grants

2023 – Present	PI, NSF's Innovation Corps (I-Corps), US <i>Novel Meso-indentation System for Ultra-soft Biomaterials (Meso-UsBio)</i>
2023 – Present	PI, Florida Heart Research Foundation, US <i>Unveiling the Multiscale Mechanical Behaviors: Structural and Viscoelastic Heterogeneity of Myocardium</i>
2023 – Present	PI, NSF CELL-MET SEED Funding, US <i>Innovative Asymmetrical Probes and Meso-Indentation Setup for Ultrasoft Tissues: Unveiling Biomechanics and Viscoelasticity</i>

Teaching Activities

2024 fall	Instructor, Undergraduate-level (73 students), ME 3120: Manufacturing Processes and Their Applications, Mechanical Engineering, Clemson, US
2023 fall	Instructor, Graduate-level (7 students), EMA 6264: Mechanical Properties of Polymers, Mechanical and Materials Engineering, FIU, US
2023 spring	One lecture, Graduate-level, EMA 5605: Fundamentals of Materials Processing, Mechanical and Materials Engineering, FIU, US
2022 spring	One lecture, Graduate-level, EMA 5200: Nanomechanics and Nanotribology, Mechanical and Materials Engineering, FIU, US
2021-2023	Mentor, NSF REU/RET Program Undergraduate and K-12 Teachers and students, including 1 Hispanic male, 2 Black females, 1 Iranian American female, and 1 Hispanic female scholars, FIU
2021-2023	Mentor, part-time undergraduate researchers, including 1 Hispanic, 1 Black and 1 Asian-American female scholars, FIU

Professional Services

2023-Present	Editorial Board for <i>Journal of Biomaterials</i>
2019-Present	Reviewer for <i>ACS Applied Materials and Interfaces</i> , <i>Acta Biomaterialia</i> , <i>Chemosphere</i> , <i>Nano Research</i> , <i>Environmental Pollutants & Bioavailability</i> , <i>Biomechanics and Modeling in Mechanobiology</i> , <i>Journal of Industrial Textiles</i> , <i>AATCC Journal of Research</i> , <i>IEEE Nanotechnology</i> , <i>ACS Applied Bio Materials</i>
2022-Present	Member of National Postdoctoral Association and Society of Biomaterials
2016-2022	Member of Golden Key International Honor Society, TAPPI, Association of American Physicians and Surgeons (AAPS), Biomedical Engineering Society, SAMPE, PHI KAPPA PHI, American Heart Association
2016-2019	Treasurer of Llano Estacado Student Chapter of the National Society of Environmental Toxicology and Chemistry

Patent and Disclosure

US 11,683,597	Systems and Methods for Multi-directional Imaging During Indentation
US 11,643,756	Method for Fabricating a Hybrid Carbon Nanofiber Product
US 17/809,059	Hybrid Carbon Nanofibers Products and Methods of Fabrication the Same
D2023-0080	Wearable, Ultralow Power, and Needleless Electrosprayer for Cannabidiol-Loaded Wound Care Film (FIU disclosure submitted)
D2024-0038	Quantum dots/2D Polymer Nanocomposite Flexible Film for Electromagnetic Interference Shielding (FIU disclosure submitted)

CN201710366583.3 A method of preparing high light transmission and dustproof screen window material and novel screen window.

CN201610212835.2 An electrospinning air filtration nanofiber material preparation method.

CN201410623913.9 A biomedical electrospinning membrane preparation method.

Publication

1. **Lihua Lou**, Rubfiaro, A. S., Deng, V., He, J., Thomas, T., Roy, M., ... & Agarwal, A. (2024). Harnessing 3D Printing and Electrospinning for Multiscale Hybrid Patches Mimicking the Native Myocardium. *ACS Applied Materials & Interfaces*. DOI: <https://doi.org/10.1021/acsami.4c06505>
2. Paul, T., Dolmetsch, T., **Lihua Lou**, & Agarwal, A. (2024). Frictional resistance and delamination mechanisms in 2D tungsten diselenide revealed by multi-scale scratch and in-situ observations. *Nanotechnology*, 35(39), 395703. DOI: <https://doi.org/10.1088/1361-6528/ad5dbe>
3. **Lihua Lou**, Dolmetsch, T., Aguiar, B.A., Mohammed, S.M.A.K. and Agarwal, A., 2024. Quantum Dots on a String: In Situ Observation of Branching and Reinforcement Mechanism of Electrospun Fibers. *Small*, p.2311073. DOI: <https://doi.org/10.1002/sml.202311073>
4. **Lihua Lou**, Bacca, N., Ma, M.S., Nautiyal, P., Bifano, T.G. and Agarwal, A., 2024. Multiscale mechanics of polydimethylsiloxane: A comparison of meso- and micro-cyclic deformation behavior. *Journal of Applied Polymer Science*, 141(25), p.e55546. DOI: <https://doi.org/10.1002/app.55546>
5. Agarwal, V., Nisar, A., Sukumaran, A.K., **Lihua Lou** and Mohammed, S.M., 2024. Synergistic Effect of Spark Plasma Sintering Driven Solid-Solution Phases on Scratch Resistance in Two-Dimensional Materials. *Lubricants*, 12(2), p.31. DOI: <https://doi.org/10.3390/lubricants12020031>
6. Rubfiaro, A.S., Prajapati, N.J., **Lihua Lou**, Ghimire, G., Agarwal, A. and He, J., 2024. Improving the development of human engineered cardiac tissue by gold nanorods embedded extracellular matrix for long-term viability. *Nanoscale*. DOI: <https://doi.org/10.1039/D3NR05422E>
7. Kazuo O. L., Dolmetsch, T., **Lihua Lou**, Thomas, T., Boesl B., and Agarwal, A., 2023. Orientation-Dependent Thermal and Mechanical Properties of 2D Boron Nitride Nanoplatelet Foams via Freeze-Drying. *ACS Appl. Nano Mater.* DOI: <https://doi.org/10.1021/acsanm.3c03289>
8. **Lihua Lou**, Rubfiaro, A.S., He, J. and Agarwal, A., 2023. Understanding Spatiotemporal Mechanical Behavior, Viscoelasticity, and Functions of Stem Cell-Derived Cardiomyocytes. *Nanoscale*. DOI: <https://doi.org/10.1039/D3NR01553J>
9. **Lihua Lou**, Paolino, L. and Agarwal, A., 2023. Bridging the Gap in Ashby's Map for Soft Material Properties for Tissue Engineering. *ACS Applied Materials & Interfaces*. DOI: <https://doi.org/10.1021/acsami.3c04331>
10. Ma, M. S., Subramanian S., **Lihua Lou**, Arvind A., Christopher S. C., and Thomas G. B. High Throughput Screening System for Engineered Cardiac Tissues. *Frontiers in Bioengineering and Biotechnology* 11: 703. DOI:

<https://doi.org/10.3389/fbioe.2023.1177688>

11. Nisar, A., **Lihua Lou**, Boesl, B. and Agarwal, A., 2023. Enhanced flexibility and thermal conductivity of HfC decorated carbon nanofiber mats. *Carbon*, 205, pp.573-582. DOI: <https://doi.org/10.1016/j.carbon.2023.01.055>
12. Jiang, P., **Lihua Lou** and Ramkumar, S., 2023. Comparison of Oil Sorption Capacity of Nonwoven Sorbents. *AATCC Journal of Research*, 10(2), pp.101-109. DOI: <https://doi.org/10.1177/24723444221132053>
13. Sesena-Rubfiaro, A., Prajapati, N.J., Paolino, L., **Lihua Lou**, Cotayo, D., Pandey, P., Shaver, M., Hutcheson, J.D., Agarwal, A. and He, J., 2023. Membrane Remodeling of Human-Engineered Cardiac Tissue by Chronic Electric Stimulation. *ACS Biomaterials Science & Engineering*, 9(3), pp.1644-1655. DOI: <https://doi.org/10.1021/acsbiomaterials.2c01370>
14. **Lihua Lou**, Rodrigues de Oliveira, N., Sahani, R., Sukumaran, A.K., John, D. and Agarwal, A., 2023. Localized Nanoindentation Paradigm for Revealing Sutured Tissue Interface Mechanics and Integrity. *ACS Applied Bio Materials*, 6(2), pp.908-918. DOI: <https://doi.org/10.1021/acsabm.2c01091>
15. Li, H., Sundaram, S., Hu, R., **Lihua Lou**, Sanchez, F., McDonald, W., Agarwal, A., Chen, C.S. and Bifano, T.G., 2023. Dynamic control of contractile force in engineered heart tissue. *IEEE Transactions on Biomedical Engineering*. DOI: <https://doi.org/10.36227/techrxiv.15025236.v1>
16. Dong, D., **Lihua Lou**, Lopez, K.O., Agarwal, A. and Bhansali, S. Revealing Nanomechanical Deformation at Interface and Degradation in All-Thin-Film Inorganic Electrochromic Device. *Nanoscale* (2023). DOI: <https://doi.org/10.1109/TBME.2023.3239594>
17. Yu, W., **Lihua Lou**, Reynolds, M., Sawhney, P. and Ramkumar, S. Effect of Test Parameters on Sensitivity of Tensile Test Results for Greige Cotton Hydroentangled Nonwoven Fabric. *AATCC Journal of Research* (2023), 10(1), pp.10-17. DOI: <https://doi.org/10.1177/24723444221132329>
18. **Lihua Lou**, Paul, T., Aguiar, B.A., Dolmetsch, T., Zhang, C. and Agarwal, A. "Direct Observation of Adhesion and Mechanical Behavior of a Single Poly (lactic-co-glycolic acid)(PLGA) Fiber Using an In Situ Technique for Tissue Engineering." *ACS Applied Materials & Interfaces* (2022). DOI: <https://doi.org/10.1021/acsami.2c09665>
19. Lin, Y. M., Lia P., **Lihua Lou**, Ariadna H., Erika P., Arvind A., and Sharan R. "Directional Dependence on Concomitant Pressure and Volume Increases During Left Ventricular Filling." *Journal of Biomechanics* (2022): 111129. DOI: <https://doi.org/10.1016/j.jbiomech.2022.111129>
20. **Lihua Lou**, Kazue O. L., Pranjali N., Arvind A. "Integrated Perspective of Scaffold Designing and Multiscale Mechanics in Cardiac Bioengineering." *Advanced NanoBiomed Research* (2021). DOI: <https://doi.org/10.1002/anbr.202100075>
21. **Lihua Lou**, Rubfiaro, A. S., He, J., Agarwal, A., Effect of Electrical Stimulation on Spontaneously Beating Dynamics of Cardiac Tissues: An Analysis Using Digital Image Correlation. *Advanced Material Technology* 2021, 2100669. DOI: <https://doi.org/10.1002/admt.202100669>

22. Odia O., **Lihua Lou** (co-1st author), Smith E., Seshadri R. Nanofibrous substrate for tissue engineering applications. *AATCC Journal of Research*, 2021. DOI: <https://doi.org/10.14504/ajr.8.6.2>
23. **Lihua Lou**, Yu, W., Kendall, R. J., Smith, E., & Ramkumar, S. S. (2020). Tensile testing and fracture mechanism analysis of polyvinyl alcohol nanofibrous webs. *Journal of Applied Polymer Science*, 49213. DOI: [10.1002/app.49213](https://doi.org/10.1002/app.49213)
24. **Lihua Lou**, Odia O., and Seshadri S. R. "Functional Nanofibers and Their Applications." *Industrial & Engineering Chemistry Research* (2020). DOI: <https://doi.org/10.1021/acs.iecr.9b07066>
25. **Lihua Lou**, Ronald J. K., and Seshadri R. "Comparison of Hydrophilic PVA/TiO₂ and Hydrophobic PVDF/TiO₂ Microfiber Webs on the Dye Pollutant Photocatalyzation." *Journal of Environmental Chemical Engineering* (2020): 103914. <https://doi.org/10.1016/j.jece.2020.103914>
26. Chai, G.H., Amr H., Tuo M., **Lihua Lou**, Jonathan M., Russell S., Lei Z., Bruce K. R., Qi (Tony) Z., P. Worth L., Michael H., Qingguo X. "Dry powder aerosol containing muco-inert particles for excipient enhanced growth pulmonary drug delivery." *Nanomedicine: Nanotechnology, Biology and Medicine* (2020): 102262. <https://doi.org/10.1016/j.nano.2020.102262>
27. **Lihua Lou**, Seenivasan S., Ramkumar S., Ernest S., Ronald J. K.. Functional PVA/VB2/TiO₂ Nanofiber Webs for Controlled Drug Delivery[J]. *ACS Applied Bio Materials*, 2019. DOI: <https://doi.org/10.1021/acsabm.9b00726>
28. **Lihua Lou**, Ronald J. K., Ernest S., Ramkumar S*. Functional PVDF/rGO/TiO₂ nanofiber webs for waste oil/water treatment[J]. *Polymer*, 2019: 122028. DOI: <https://doi.org/10.1016/j.polymer.2019.122028>
29. **Lihua Lou**, Wang J, Yong-Joon L, Ramkumar S*. Visible Light Photocatalytic Functional TiO₂/PVDF Nanofibers for Dye Pollutant Degradation[J]. *Particle & Particle Systems Characterization*, 36, 1900091, 2019. [Cover image] DOI: <https://doi.org/10.1002/ppsc.201970025>
30. Wang J, **Lihua Lou**, Qiu J*. Super-tough hydrogels using ionically crosslinked networks[J]. *Journal of Applied Polymer Science*, 136, 48182, 2019. DOI: <https://doi.org/10.1002/app.48182>
31. **Lihua Lou**, Wang J, Ramkumar S*. Optimization of testing parameters for tensile property evaluation of poly (vinyl alcohol) nanofibers webs[J]. *Journal of Applied Polymer Science*, 136, 47159, 2019. DOI: <https://doi.org/10.1002/app.47159>
32. **Lihua Lou**, Qin X H*, Zhang H. Preparation and study of low-resistance polyacrylonitrile nano membranes for gas filtration[J]. *Textile Research Journal*, 87, 208-215, 2017. DOI: <https://doi.org/10.1177/0040517515627171>

Conference Publications

1. **Lihua Lou** and Ramkumari, S. Functional nanoparticle/nanofiber composite webs in environmental protection and human health applications (2021) TAPPICon Virtual 2021, pp. 636-666. Link: <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85112686498&partnerID=40&md5=4434e9efbaff184e0a2deadb4b965d37>

2. Paolino, Lia, **Lihua Lou**, Alberto Sesena Rubfiaro, Jin He, and Arvind Agarwal. "Nanomechanical Properties of Engineered Cardiomyocytes Under Electrical Stimulation." (2021). DOI: [10.25148/MMEURS.009775](https://doi.org/10.25148/MMEURS.009775)
3. Dolmetsch, Tyler, Tanaji Paul, **Lihua Lou**, Benjamin Boesl, and Arvind Agarwal. "Deformation mechanisms of hierarchically structured 2D single-crystal materials revealed by real-time high-resolution in-situ nanomechanical testing." (2022). (**Published Conference Paper**) Link: [Engineering Conferences International | Celebrating 60 years of international, interdisciplinary engineering conferences \(engconf.us\)](https://engconf.us)
4. DeForest, Tinsley Elizabeth, Shekhar Bhansali, Frank K. Urban, Dongmei Dong, **Lihua Lou**, Arvind Agarwal, Sofia Pinzon et al. "Exploring the Dielectric Properties of Lanthanide Oxide Thin Films." In *244th ECS Meeting (October 8-12, 2023)*. ECS, 2023. (**Published Conference Paper**) Link: [244th ECS Meeting \(October 8-12, 2023\) \(confex.com\)](https://confex.com)
5. Bifano T, Chen C, Li H, Sundaram S, **Lihua Lou**, Arvind Agarwal, Hu R. Dynamic Control of Contractile Force in Engineered Heart Tissue. Authorea Preprints. 2023 Oct 30. Link: [Dynamic Control of Contractile Force in Engineered Heart Tissue \(techrxiv.org\)](https://techrxiv.org)
6. Dong, Dongmei, **Lihua Lou**, Arvind Agarwal, and Shekhar Bhansali. "Direct Observation of Reversible Surface Potential in Pseudocapacitive Electrochromic Films by Kelvin Probe Force Microscopy." In *245th ECS Meeting (May 26-30, 2024)*. ECS, 2024. Link: [Direct Observation of Reversible Surface Potential in Pseudocapacitive Electrochromic Films by Kelvin Probe Force Microscopy \(confex.com\)](https://confex.com)

Book Chapters

1. **Lou L**, Yu W, Ramkumar S. Editor: Roshan Paul. Wearable and Smart Responsive Textiles. in *High Performance Technical Textiles*. Wiley, Chennai, India, 2019: 439-473. DOI: <https://doi.org/10.1002/ppsc.201970025>