

Changhao Li

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RESEARCH INTERESTS

Nonlinear Mechanics for Active Matter, Agent-based Modeling for Biological Materials, Machine Learning for Mechanics and Material Sciences, Parallel and High-performance Computing

EDUCATION

- **The Pennsylvania State University** State College, PA, USA
• *Ph.D. in Engineering Mechanics; GPA: 3.6/4.0; Supervisor: Dr. Sulin Zhang* Aug 2018 - Present
- **Beihang University** Beijing, China
• *Bachelor of Engineering in Engineering Mechanics; GPA: 3.8/4.0* Aug 2014 - Jul 2018
- **The University of Tokyo** Tokyo, Japan
• *Exchange undergraduate student* Sep 2017 - Apr 2018

HONORS AND AWARDS

- C. Norwood Wherry Memorial Graduate Fellowship in Engineering 2021
- Professor and Mrs. Ralph U. Blasingame Memorial Graduate Fellowship in Engineering 2021
- Harry G. Miller Fellowship in Engineering 2020
- University Graduate Fellowship 2018
- Outstanding Graduates of Beihang University 2018

PUBLICATIONS

Journal Articles:

- Li, C., Feng, L., Park, Y. J., Yang, J., Li, J., & Zhang, S. (2023). Machine learning traction force maps of cell monolayers. **arXiv preprint** arXiv:2304.10065.
- Li, C., Nijjer, J., Feng, L., Zhang, Q., Yan, J., Zhang, S. (2022). Mechano-lithography: stress anisotropy driven nematic order in growing three-dimensional bacterial biofilms. **arXiv preprint** arXiv:2211.16354.
- Nijjer, J., Li, C. (co-first author), Kothari, M., Henzel, T., Zhang, Q., Tai, J. S. B., ... Yan, J. (2023). Biofilms as self-shaping growing nematics. **Nature Physics** (Accepted)
- Li, W., Li, C. (co-first author), Zhang, G., Li, L., Huang, K., Gong, X., Zhang, C., Zheng, A., Tang, Y., Wang, Z. and Tong, Q., 2021. Molecular Ferroelectric-Based Flexible Sensors Exhibiting Supersensitivity and Multimodal Capability for Detection. **Advanced Materials**, 33(44), p.2104107.
- Nijjer, J., Li, C., Zhang, Q., Lu, H., Zhang, S. and Yan, J., 2021. Mechanical forces drive a reorientation cascade leading to biofilm self-patterning. **Nature communications**, 12(1), pp.1-9.
- Yao, B., Hong, W., Chen, T., Han, Z., Xu, X., Hu, R., Hao, J., Li, C., Li, H., Perini, S.E. and Lanagan, M.T., 2020. Highly Stretchable Polymer Composite with Strain-Enhanced Electromagnetic Interference Shielding Effectiveness. **Advanced Materials**, 32(14), p.1907499.

Conferences:

- Li, C., Nijjer, J., Yan, J. and Zhang, S., 2021. Agent-based Modeling for Biofilm Growth under Mechanical Confinement. In APS March Meeting Abstracts (Vol. 2021, pp. M71-271).
- Nijjer, J., Li, C., Zhang, S. and Yan, J., 2021. Self-organization of bacteria in confined interstitial biofilms. In APS March Meeting Abstracts (Vol. 2021, pp. J13-012).
- Nijjer, J., Henzel, T., Li, C., Zhang, S., Cohen, T. and Yan, J., 2022. Growth of bacterial biofilms at interfaces. Bulletin of the American Physical Society.

In Preparation:

- Feng, L., Zhao, T., Li, C., Zhang, S., Hsia, K. Stress Gradient Driven Curvotaxis. (PNAS Nexus, in review)
- Ataie, Z., Li, C., et al. Formation of Biohybrid Spheroids via Cell-Mediated Microgel Self-Assembly (Submitted to PNAS)

INDUSTRY EXPERIENCE

- **Dassault Systèmes - SIMULIA** Pleasonton, CA
• *Industry process expert intern* May 2023 - Sep 2023
 - **C++ Multiphysics Solver:** Using various numerical algorithm to solve Darcy-Nernst-Planck-Poisson system.
 - **High-fidelity Fuel Cell Simulations:** Providing efficient industrial solution for proton exchange fuel cell optimization.

OTHER EXPERIENCE

Journal Reviewer (Extreme Mechanics Letters, International Journal of Solids and Structures, ASME Open Journal of Engineering); **Teaching Assistant** (EMCH 210, 212); **Student Judge** (ESM Today Workshop 2019, 2022, 2023)