

Zhaofei Zheng

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EDUCATION

Yale University

Postdoctoral associate in Mechanical Engineering and Materials Science, Advisor: Dr. Yimin Luo

New Haven, CT

Jan 2025 - present

Johns Hopkins University

PhD in Physics, Advisor: Dr. Francesca Serra

Baltimore, MD

Aug 2018 - Aug 2024

University of Science and Technology of China

Bachelor of science in Applied Physics

Hefei, China

Sept 2014 - June 2018

SKILLS

- **Development:** Liquid crystals, polymer networks, nanocomposites, adhesives, surface modification, thin film coatings (CVD, sputtering).
- **Metrology & Characterization:** (Polarized) optical microscopy, SEM, XRD, rheology, polarization optics.
- **Optical & Device Design:** Polarization optics, photopatterning, photolithography, LC lensing, LC materials relevant to waveguides.
- **Programming & Data Analysis:** MATLAB, Mathematica, Python, ImageJ, PIV
- **Collaboration:** Cross-functional teamwork, vendor engagement, and technical presentations at international conferences.

RESEARCH EXPERIENCE

- **Contractile mechanical phenotype accelerates defect dynamics in cell monolayers** Jan 2025 - Present
 - Developed and characterized biocompatible and hybrid materials to study mechanical-optical coupling in fibroblast/myofibroblast monolayers.
 - Performed live-cell imaging and optical analysis, integrating materials and optical methods for defect dynamics.
 - Investigated how increased contractility alters defect recombination rates and tissue organization
- **Formation of Large and High-quality Liquid Crystal Smectic Lens** Jan 2024 - Aug 2024
 - Designed and fabricated 2D-geometry using photolithography
 - Investigated liquid crystal structure memory effect and lensing effect with defects
- **Cholesteric Liquid Crystal Behavior with Templated Polymer Network** Sept 2020 - Dec 2023
 - Synthesized cross-linked polymer networks for liquid crystal alignment storage.
 - Investigated stability and optical performance of templated films, applying SEM and optical testing.
 - Conducted Scanning Electron Microscopy measurements on polymer network films
- **Liquid Crystal Disclination Defect Lines Formation in Capillary** Sept 2018 - Sept 2020
 - Investigated influence of temperature variation rate on liquid crystal phase transitions
 - Examined spontaneous twisting disclination lines which is a potential structure for waveguide

CONFERENCE AND AWARDS

- Liquid crystals Gordon Research Conference 2023, 2025 Manchester, NH
 - * Oral presentation (selected as a speaker, 4 out of 80 PhD and Postdoc students)
- American Physical Society March meeting 2021, 2022 Online
- The XXVIII International Materials Research Congress Meeting 2019 Cancun, Mexico
 - * Soft Matter poster prize winner, (2 out of 50)

PUBLICATIONS

- **Zhaofei Z.**, Jose X. V., Daniel A. B., and Francesca S. "Emergence and stabilization of transient twisted defect structures in confined achiral liquid crystals at a phase transition." *Soft Matter* 17, no. 14 (2021): 3848-3854.
- **Zhaofei Z.**, and Francesca S. "Effect of smectic polymers on cholesteric liquid crystals." *Physical Review E* 110.5 (2024): 054703.
- Kurmanbek K., Kirsten E., Kyle S., **Zhaofei Z.**, Yun C., Francesca S., and Brian A. C. "Migration and division in cell monolayers on substrates with topological defects." *Proceedings of the National Academy of Sciences* 120, no. 30 (2023): e2301197120.
- **Zheng, Z.**, Luo, Y., Chen, J., Luo, Y. Myofibroblasts slow down defect recombination dynamics in cell monolayers. Manuscript in preparation.