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Education

Doctor of Philosophy (PhD) — Sep 2020 — Sep 2024 *Duke University, Durham, NC*

- Advisor: John Dolbow

Master of Science (MS) — Sep 2017 — March 2020 *Shanghai Jiao Tong University, Shanghai, China*

- Advisor: Yongxing Shen

Bachelor of Engineering (BE) — Sep 2013 — July 2017 *Jilin University, Changchun, China*

Employment

Postdoctoral Fellow — Oct 2024 — Oct 2026 *Johns Hopkins University, Baltimore, MD*

- Advisor: Somnath Ghosh

Research Aide Technical — May 2023 — Aug 2023 *Argonne National Lab, Lemont, IL*

Teaching Assistant — Aug 2020 — May 2021 *Duke Kunshan University, Kunshan, China*

Publications and Preprints

Liu, Y., & Ghosh, S. (2026). Damage sensing digital twin for piezocomposites integrating neural operator with parametrically upscaled constitutive damage model. *Submitted*.

Kumar, A., **Liu, Y.**, Dolbow, J. E., & Lopez-Pamies, O. (2024). The strength of the brazilian fracture test. *Journal of the Mechanics and Physics of Solids*, 182, 105473. <https://doi.org/10.1016/j.jmps.2023.105473>

Liu, Y. (2024). A computational framework for simulating crack nucleation and growth in materials subjected to dynamic loads [PhD thesis]. In *Duke University* (p. 153).

Liu, Y., Lopez-Pamies, O., & Dolbow, J. E. (2024). On the effects of material strength in dynamic fracture: A phase-field study. *arXiv Preprint*. <https://doi.org/10.48550/arXiv.2411.16393>

Liu, Y., Zhong, P., Lopez-Pamies, O., & Dolbow, J. E. (2024). A model-based simulation framework for coupled acoustics, elastodynamics, and damage with application to nano-pulse lithotripsy. *International Journal of Solids and Structures*, 289, 112626. <https://doi.org/10.1016/j.ijsolstr.2023.112626>

Liu, Y., Claus, S., Kerfriden, P., Chen, J., Zhong, P., & Dolbow, J. E. (2023). Model-based simulations of pulsed laser ablation using an embedded finite element method. *International Journal of Heat and Mass Transfer*, 204, 123843. <https://doi.org/10.1016/j.ijheatmasstransfer.2022.123843>

Xiang, G., Chen, J., Ho, D., Sankin, G., Zhao, X., **Liu, Y.**, Wang, K., Dolbow, J., Yao, J., & Zhong, P. (2023). Shock waves generated by toroidal bubble collapse are imperative for kidney stone dusting during holmium:YAG laser lithotripsy. *Ultrasonics Sonochemistry*, 101, 106649. <https://doi.org/10.1016/j.ultsonch.2023.106649>

Chen, C., **Liu, Y.**, He, X., Li, H., Chen, Y., Wei, Y., Zhao, Y., Ma, Y., Chen, Z., Zheng, X., & Liu, H. (2021). Multiresponse shape-memory nanocomposite with a reversible cycle for powerful artificial muscles. *Chem. Mater.*, 33(3), 987–997. <https://doi.org/10.1021/acs.chemmater.0c04170>

Liu, Y., Cheng, C., Ziaei-Rad, V., & Shen, Y. (2020). A micromechanics-informed phase field model for brittle fracture accounting for unilateral constraint. *Engineering Fracture Mechanics*, 107358. <https://doi.org/10.1016/j.engfracmech.2020.107358>

Liu, Y., Weng, K., & Shen, Y. (2020). A manifold learning approach to accelerate phase field fracture simulations in the representative volume element. *SN Applied Sciences*, 2(10), 1682. <https://doi.org/10.1007/s42452-020-03468-6>

Conference Presentations

Liu, Y., & Ghosh, S. (2026). Virtual damage sensing digital twin for piezocomposites integrating neural operator with parametrically upscaled constitutive damage model. HEMI Day 2026. <https://hemi.jhu.edu/event/hemi-day/>

Kumar, A., Liu, C., **Liu, Y.**, Dolbow, J., & Lopez-Pamies, O. (2024). The revisited phase-field approach to brittle fracture: Application to the diametral compression and wing-crack problems. The 16th world congress on computational mechanics (WCCM16).

- Liu, Y.,** Lopez-Pamies, O., & Dolbow, J. E. (2024). *A phase-field approach for the nucleation and propagation of dynamic cracks*. The 16th world congress on computational mechanics (WCCM16).
- Liu, Y.,** Zhong, P., Lopez-Pamies, O., & Dolbow, J. E. (2023). *A model-based simulation framework for coupled acoustics, elastodynamics, and damage with application to nano-pulse lithotripsy*. The 17th united states national congress on computational mechanics (USNCCM17).
- Liu, Y.,** Claus, S., Kerfriden, P., Chen, J., Zhong, P., & Dolbow, J. E. (2022). *Model-based simulations of pulsed laser ablation using a CutFEM method*. The 15th world congress on computational mechanics (WCCM15).
- Liu, Y.,** Cheng, C., & Shen, Y. (2019). *A homogenization-based phase field approach to fracture*. The 15th united states national congress on computational mechanics (USNCCM15).
- Liu, Y.,** Cheng, C., & Shen, Y. (2019). *A micromechanics-based phase field approach to fracture*. The 2nd international conference of mechanics of advanced materials and structures.
- Liu, Y.,** Weng, K., & Shen, Y. (2019). *A manifold learning approach for multiscale phase field evolution for fracture*. The international conference on data driven computing and machine learning in engineering.