Jiawei Yang

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EDUCATION

2019	**Ph.D**., Engineering Sciences, **Harvard University**, Cambridge, MA, USA Advisor: Prof. Zhigang Suo. Thesis: Hydrogel adhesion.
2016	**M.S.**, Engineering Sciences, **Harvard University**, Cambridge, MA, USA
2015	**D.Eng.**, Engineering Mechanics, **Tongji University**, Shanghai, China
2009	**B.E.**, Engineering Mechanics, **Tongji University**, Shanghai, China

EMPLOYMENT

01/2024 – present	**Assistant Professor** Mechanical and Materials Engineering, Worcester Polytechnic Institute
06/2019 – 12/2023	**Postdoctoral Researcher** Chemical Engineering, Massachusetts Institute of Technology Advisors: Prof. Daniel Anderson and Prof. Robert Langer
09/2014 – 05/2019	**Graduate Researcher** Materials Science and Mechanical Engineering, Harvard University Advisor: Prof. Zhigang Suo
09/2009 – 08/2014	**Graduate Researcher** Applied Mechanics, Tongji University Advisor: Prof. Guohua Nie

SELECTED HONORS AND AWARDS

2026	Excellence in Research, *Worcester Polytechnic Institute*
2025	NSF CAREER Award
2025	James Nichols Heald Research Award, *Worcester Polytechnic Institute*
2024	James Nichols Heald Startup Award, *Worcester Polytechnic Institute*
2015	Robert L. Wallace Prize Fellowship, *Harvard University*
2011 – 2013	China Scholarship Council Fellowship, *China Scholarship Council*
2009 – 2015	Tongji University Fellowship, *Tongji University*

JOURNAL PUBLICATIONS AND PREPRINTS

33. Ying, B., Yu, K., Yang, S., Yang, J., 2026. Mechanics of electroadhesion by polycation interfacial bridging: sticky electrophoresis, ionic complexation and chain entanglement.

Proceedings of the Royal Society A, 482: 20260579.

32. Sun, J., Wang, Y. and Yang, J., 2026. Adhesives with a thickness smaller than the fractocohesive length enhance adhesion. Soft Matter, 22(27), pp.4689-4697.
31. Yang, J., Zhao, Y., Jeang, W.J., Pabel, S., Wong, B.M., Manan, R., Nahrendorf, M., Langer, R. and Anderson, D.G., 2026. A modular hydrogel system with independent control of bioadhesion, fibrosis, and stiffness. Science Advances, 12(26), p.eaee3894.
30. Krishnan, S.R., O'Keeffe, L., Rudra, A., Gumustop, D., Khatib, N., Liu, C., Yang, J., Wang, A., Bochenek, M.A., Lu, Y.C., Bose, S., Reed, K., Langer, R. and Anderson, D.G., 2026. Emergency delivery of particulate drugs by active ejection using in vivo wireless devices. Nature Biomedical Engineering, 10(1), pp.144-160.
29. Sun, J., Liu, Q. and Yang, J., 2025. Mixing polymers and polymer networks for topological adhesion. Journal of the Mechanics and Physics of Solids, p.106321.
28. Yang, J., 2025. Swelling and large deformation of polymer brushes. International Journal of Solids and Structures, p.113587.
27. Jeang, W.J., Bochenek, M.A., Bose, S., Zhao, Y., Wong, B.M., Yang, J., Jiang, A.L., Langer, R. and Anderson, D.G., 2024. Silicone cryogel skeletons enhance the survival and mechanical integrity of hydrogel-encapsulated cell therapies. Science Advances, 10(14), p.eadk5949.
26. Yang, X., Steck, J., Yang, J., Wang, Y. and Suo, Z., 2021. Degradable plastics are vulnerable to cracks. Engineering, 7(5), pp.624-629.
25. Chu, C.K., Joseph, A.J., Limjoco, M.D., Yang, J., Bose, S., Thapa, L.S., Langer, R., and Anderson, D.G., 2020. Chemical Tuning of Fibers Drawn from Extensible Hyaluronic Acid Networks. Journal of the American Chemical Society, 142(46), pp.19715-19721.
24. Yang, J., Illeperuma, W. and Suo, Z., 2020. Inelasticity increases the critical strain for the onset of creases on hydrogels. Extreme Mechanics Letters, p.100966.
23. Yang, J., Steck, J. and Suo, Z., 2020. Gelation kinetics of alginate chains through covalent bonds. Extreme Mechanics Letters, p.100898.
22. Yang, J., Steck, J., Bai, R., and Suo, Z., 2020. Topological adhesion II. Stretchable adhesion. Extreme Mechanics Letters, p100891.
21. Steck, J., Kim, J., Yang, J., Hassan, S. and Suo, Z., 2020. Topological adhesion. I. Rapid and strong topohesives. Extreme Mechanics Letters, p.100803.
20. Mu, R., Yang, J., Wang, Y., Wang, Z., Chen, P., Sheng, H. and Suo, Z., 2020. Polymer-filled macroporous hydrogel for low friction. Extreme Mechanics Letters, p.100742.
19. Yang, J., Bai, R., Li, J., Yang, C., Yao, X., Liu, Q., Vlassak, J.J., Mooney, D.J. and Suo, Z., 2019. Design molecular topology for wet-dry adhesion. ACS Applied Materials & Interfaces, 11(27), pp.24802-24811.
18. Yang, J., Bai, R., Chen, B. and Suo, Z., 2019. Hydrogel Adhesion: A Supramolecular

Synergy of Chemistry, Topology, and Mechanics. Advanced Functional Materials, p.1901693.

17. Yang, J., Jin, L., Hutchinson, J.W. and Suo, Z., 2019. Plasticity retards the formation of creases. Journal of the Mechanics and Physics of Solids, 123, pp.305-314.
16. Yang, X.#, Yang, J.#, Chen, L. and Suo, Z., 2019. Hydrolytic crack in a rubbery network. Extreme Mechanics Letters, p.100531.
15. Wang, Y., Jia, K., Xiang, C., Yang, J., Yao, X. and Suo, Z., 2019. Instant, tough, noncovalent adhesion. ACS Applied Materials & Interfaces, 11(43), pp.40749-40757
14. Chen, B., Yang, J., Bai, R. and Suo, Z., 2019. Molecular Staples for Tough and Stretchable Adhesion in Integrated Soft Materials. Advanced Healthcare Materials, p.1900810.
13. Steck, J., Yang, J. and Suo, Z., 2019. Covalent Topological Adhesion. ACS Macro Letters, 8, pp.754-758.
12. Bai, R., Yang, J., Morelle, X.P. and Suo, Z., 2019. Flaw-Insensitive Hydrogels under Static and Cyclic Loads. Macromolecular Rapid Communications, 40(8), p.1800883.
11. Bai, R., Chen, B., Yang, J. and Suo, Z., 2019. Tearing a hydrogel of complex rheology. Journal of the Mechanics and Physics of Solids, 125, pp.749-761.
10. Bai, R., Yang, J. and Suo, Z., 2019. Fatigue of hydrogels. European Journal of Mechanics-A/Solids, 74, pp.337-370.
9. Yang, J. 2019. Hydrogel Adhesion. Doctoral dissertation, Harvard University, Graduate School of Arts & Sciences.
8. Yang, J., Bai, R., and Suo, Z., 2018. Topological Adhesion of Wet Materials. Advanced Materials, p.1800671.
7. Ouchi, T.#, Yang, J.#, Suo, Z. and Hayward, R.C., 2018. Effects of Stiff Film Pattern Geometry on Surface Buckling Instabilities of Elastic Bilayers. ACS Applied Materials & Interfaces, 10(27), pp.23406-23413.
6. Bai, R., Yang, J., Morelle, X.P., Yang, C. and Suo, Z., 2018. Fatigue Fracture of Self-Recovery Hydrogels. ACS Macro Letters, 7(3), pp.312-317.
5. Auguste, A., Yang, J., Jin, L., Chen, D., Suo, Z. and Hayward, R.C., 2018. Formation of high aspect ratio wrinkles and ridges on elastic bilayers with small thickness contrast. Soft Matter, *14*, *8545-8551*.
4. Li, J., Celiz, A.D.#, Yang, J.#, Yang, Q., Wamala, I., Whyte, W., Seo, B.R., Vasilyev, N.V., Vlassak, J.J., Suo, Z. and Mooney, D.J., 2017. Tough adhesives for diverse wet surfaces. Science, 357(6349), pp.378-381.
3. Huang, J.#, Yang, J.#, Jin, L., Clarke, D.R. and Suo, Z., 2016. Pattern Formation in Plastic Liquid Films on Elastomers by Ratcheting. Soft Matter, 12(16), pp.3820-3827.
2. Yang, J. and Nie, G., 2014. Analysis of Sinusoidal Interfacial Wrinkling of an Anisotropic Film Sandwiched Between Two Compliant Layers. Journal of Applied Mechanics, 81(9),

p.091013.

1. Yu, A., Yang, J., Nie, G. and Yang, X., 2011. An improved model for naturally curved and twisted composite beams with closed thin-walled sections. Composite Structures, 93(9), pp.2322-2329.

BOOK (CHAPTERS)

1. Yang, J. and Bai, R., 2024. Mechanics of Wet Adhesion. Mechanics of Flexible and Stretchable Electronics, pp.345-372.

PATENTS

1. Yang, J., Bai, R., and Suo, Z., Harvard College, 2021. *Topological adhesion of materials*. U.S. Patent Application 17/048,803.
2. Yang, J., Zhao, Y., Jeang, W., Langer, R., and Anderson, D.G., Invention disclosure, 2025. *A modular design for hydrogel implants with synergistically optimized surface functional properties and bulk mechanical properties.*
3. Sun, J., Wang, Y., and Yang, J., Invention Disclosure, 2026. *In situ densification process for toughening adhesives and materials.*

INVITED TALKS AND PRESENTATIONS

10/2026 *Adhesives with a thickness smaller than the fractocohesive length enhance adhesion*, Society of Engineering Science (SES), West Lafayette, IN

10/2026 *Brittle adhesives for tough tissue adhesion and prosthesis*, Society of Engineering Science (SES), West Lafayette, IN

10/2026 *Modular bioadhesives with decoupled adhesion and stiffness*, Dept. of Materials Science and Engineering, University of Connecticut, Storrs, CT

10/2026 *Modular bioadhesives with decoupled adhesion and stiffness*, Dept. of Mechanical Engineering, University of Florida, virtual seminar

06/2026 *How do weak topohesives generate strong adhesion?* National Congress for Theoretical and Applied Mechanics (USNC-TAM), Pasadena, CA

04/2026 *Modular hydrogel systems for bioadhesion and anti-bioadhesion*, Dept. of Biomedical Engineering, Worcester Polytechnic Institute, Worcester, MA

01/2026 *Modular hydrogel systems for controlling adhesion and anti-adhesion to biological systems*, Dept. of Polymer Science and Engineering, UMass Amherst, Amherst, MA

12/2024 *Modular design of hydrogel adhesives for strong tissue adhesion and mechanical compatibility* Dept. of Chemical Engineering, Worcester Polytechnic Institute, Worcester, MA

10/2023 *Large deformation and swelling of polymer brushes*, Society of Engineering Science (SES), Minnesota, MN

04/2023 *Biointerfaces by design: from wet adhesion to implantation*, Dept. of Mechanical Engineering, Worcester Polytechnic Institute, Worcester, MA

10/2022 *Design molecular topologies for wet tough adhesion*, The Dow Chemical Company, Midland, MI

04/2022 *Molecular topology design of wet adhesion for merging human-machine interface*, Dept. of Mechanical Engineering, Texas A&M University, College Station, TX

02/2022 *Wet adhesion technology for merging human-machine interface*, Dept. of Mechanical Engineering, University of Cincinnati, virtual seminar

12/2021 *Wet adhesion technology for merging human-machine interface*, Dept. of Mechanical Engineering, Pennsylvania State University, State College, PA

11/2021 *Wet, tough adhesion for merging human-machine interface*, Dept. of Mechanical Engineering, Syracuse University, Syracuse, NY

09/2021 *Wet, tough adhesion for merging human-machine interface*, Dept. of Mechanical Engineering, Case Western Reserve University, virtual seminar

03/2021 *Can crease form in metals?* Engineering and Applied Science (EAS) Forum, virtual seminar

09/2018 *Molecular stitching of wet materials*, NewMech workshop, Brown University, Providence, RI

06/2018 T*opological adhesion of wet materials*, National Congress for Theoretical and Applied Mechanics (USNC-TAM), Chicago, IL

05/2018 *Topological adhesion of wet materials*, NSF Harvard MRSEC site visit, Harvard University, Cambridge, MA

07/2017 Gordon Research Conference on Adhesion, South Hadley, MA

05/2017 *Tough adhesives for diverse wet surfaces*, NewMech workshop, Massachusetts Institute of Technology, Cambridge, MA

TEACHING

2027 Spring ME 593 *Mechanics and Design of Soft Materials*, Worcester Polytechnic Institute

2026 Fall ME 5380 *Foundations of Elasticity*, Worcester Polytechnic Institute

2026 Spring ME 591 *Graduate Seminars*, Worcester Polytechnic Institute

2026 Spring ES 2502 *Stress Analysis*, Worcester Polytechnic Institute

2025 Fall ME 5380 *Foundations of Elasticity*, Worcester Polytechnic Institute

2025 Spring ES 2502 *Stress Analysis*, Worcester Polytechnic Institute

2025 Spring ME 591 *Graduate Seminars*, Worcester Polytechnic Institute

2024 Fall ME 5380 *Foundations of Elasticity*, Worcester Polytechnic Institute

2024 Spring ES 2502 *Stress Analysis*, Worcester Polytechnic Institute

2016 Spring Teaching Fellow, ES 180 *Engineering Thermodynamics*, Harvard University

PROFESSIONAL SERVICES AND OUTREACH

11/2026	NSF CAREER review panelist
10/2026	Symposium organizer, Society of Engineering Science (SES)
06/2026	Session chair, USNC-TAM
05/2026	NSF ad hoc reviewer
03/2026 – 04/2026	Organizer, departmental seminar series
06/2025 – 08/2025	WPI Early Research Experience Program
04/2025	NSF ad hoc reviewer
01/2025 – 02/2025	Organizer, departmental seminar series
08/2024 – present	Department Graduate Committee: student recruitment, course offerings, seminar organization, website update, judge for student research projects showcase, and M.S. and PhD qualifying exams and thesis defenses
10/2024	Outreach, educate grade 4-12 students on hydrogels and their biomedical applications, the Central Massachusetts STEM Ecosystem.
01/2024	Judge, science competition, Mass Academy of Math and Science
2014 –	Journal reviewer: *Science Advances*, *Physical Review Letters*, *Journal of the Mechanics and Physics of Solids; ACS Nano; ACS Macro Letters; Macromolecules; Journal of Materials Chemistry B; RSC Advances; Soft Matter; Experimental Mechanics; Cellulose; Journal of Applied Mechanics; Extreme Mechanics Letters; Experimental Mechanics; NPG Asia Materials; Acta Biomaterialia; Applied Physics Letters.*

ACADEMIC ADVISING

08/2026 – present	Mingrui Qiu, PhD student
08/2025 – present	Yu Wang, PhD student
06/2025 – 10/2025	Binbin Ying, postdoc
06/2025 – 08/2025	Jessica Amuasi, undergraduate student
08/2024 – present	Jiatai Sun, PhD student
10/2024 – 05/2025	Farhan Seliya, Master student
10/2024 – 12/2024	Johanna Castillo, undergraduate student

Thesis committees

07/2026	Jiatai Sun, PhD qualifying exam
04/2026	Rodrigo Romero, PhD qualifying exam
04/2026	Sarah Mckinley, MS thesis defense
12/2025	Omid Mahdavi, PhD qualifying exam
06/2025	Hamed Jafarishad, PhD defense
04/2025	Amanda Smith, PhD qualifying exam
12/2024	William Francis Chissoe V, Master’s defense
09/2024	Haozhe Yu, PhD qualifying exam

09/2024 Gary DeVilbiss, PhD qualifying exam

RESEARCH SUPPORT

02/15/2025 – 01/31/2030	NSF CAREER: Modular Design of Bioadhesives for Implantation
01/02/2024 – present	James Nichols Heald Startup Award, Worcester Polytechnic Institute