Zheng Jia

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PROFESSIONAL EMPLOYMENT

2022.01-Present	**Associate Director** Institute of Applied Mechanics, Zhejiang University
2021.01-Present	**Associate Professor with Tenure**, Department of Engineering Mechanics, Zhejiang University
2022.05-2023.08	**Deputy Director** Office of Professional Degree, Graduate School of Zhejiang University
2017.12-2020.12	**Assistant Professor**, Department of Engineering Mechanics, Zhejiang University
2017.01-2017.12	**Postdoctoral Fellow**, Hopkins Extreme Materials Institute, Johns Hopkins University Advisor: Dr. Vicky Nguyen
2015.01-2016.12	**Postdoctoral Fellow**, Department of Mechanical Engineering, Northwestern University Advisor: Dr. Wing Kam Liu

EDUCATION AND QUALIFICATION

2009.09-2014.12	**Ph.D.**, Mechanical Engineering, University of Maryland-College Park Advisor: Dr. Teng Li
2014.03-2014.07	**Visiting Ph.D.**, Engineering Sciences, Harvard University Advisor: Dr. Zhigang Suo
2005.09-2009.07	**Bachelor**, Engineering Mechanics, Zhejiang University, China Advisor: Dr. Weiming Tao

MEMBERSHIPS IN PROFESSIONAL SOCIETIES

2021-Present	Member, State Key Laboratory of Fluid Power and Mechatronic Systems
2018-Present	Member, Chinese Society of Theoretical and Applied Mechanics
2017-Present	Member, Key Laboratory of Soft Machines and Smart Devices of Zhejiang Province
2013-Present	Member, Society of Engineering Science (SES)
2011-Presnet	Member, American Society of Mechanical Engineers (ASME)

RESEARCH INTERESTS

- **Mechanics of soft materials**: deformation, growth, fracture and instability of hydrogels, ionic conductive elastomers and gels, heterogeneous polymer networks, anisotropic hydrogels, hydrogel adhesives, highly deformable electrode materials for Li/Na batteries.
- **Mechanics of flexible structures and devices**: soft ionotronics, soft machines and soft robots, self-morphing structures, chemomechanically-driven devices and machines, flexible electrodes for batteries.

ACADEMIC HONORS AND AWARDS

- Wiley China Open Science Highly Contributing Author, 2023
- The Zhejiang Provincial Science Fund for Distinguished Young Scholars, 2021
- Excellent Guide Teacher Prize of the 3rd International Engineering Mechanics Contest (Asian Region), 2021
- Second Prize of Junior Faculty Teaching Competition, Zhejiang University, 2020
- Extreme Mechanics Letters Young Investigator Award, Extreme Mechanics Letters, 2019
- Thousand Young Talents Plan, 2017
- Distinguished Dissertation Award, University of Maryland, 2014 (*sole recipient from the area of engineering, physical sciences and mathematics*)
- Graduate School Dean's Dissertation Fellowship, University of Maryland, 2013 (*sole recipient in College of Engineering, 11 out of 4000+ doctoral students across campus*)
- Ann G. Wylie Dissertation Fellowship, University of Maryland, 2013
- A.J. Clark School Future Faculty Fellow, University of Maryland, 2012
- Haythornthwaite Foundation Travel Award, ASME Applied Mechanics Division, 2011
- NSF Student Travel Award, NSF CMMI Conference, Atlanta, 2011

JOURNAL PUBLICATIONS (Google citations>5000; H-index=28)

* indicates equal contribution # indicates corresponding author

1. J. Ma, X.Z. Zhang, D.C. Yin, Y.J. Cai, Z.H. Shen, Z. Sheng, J.B. Bai, S.X. Qu, S.Z. Zhu#, **Z. Jia#**, Designing Ultratough Single-Network Hydrogels with Centimeter-Scale Fractocohesive Lengths via Inelastic Crack Blunting, ***Advanced Materials***, 2311795 (2024)
2. Y.J. Cai, S.X. Qu, **Z. Jia#**, Anomalous fracture behavior of soft layered materials, ***International Journal of Mechanical Science***, 267, 109018 (2024)
3. Y.J. Cai, J. Ma, Z.H. Shen, X.M. Shao, **Z. Jia#**, S.X. Qu, Enhance the fracture resistance of hydrogels by regulating the energy release rate via bilayer designs: Theory and experiments, ***Journal of the Mechanics and Physics of Solids***, 170, 105125 (2023)
4. Z. Sheng, J. Ma, Z.H. Shen, S.X. Qu, and **Z. Jia#**, Chemomechanics Underpinning the Growth and Strengthening Behaviors of Mechanoresponsive Self-Growing Hydrogels, ***Macromolecules***, 56, 9398−9409 (2023)
5. Z.H. Shen, J. Ma, Y.J. Cai, S.Y. Li, D.R, Ruan, S.F. Dai, Z. Sheng, J.B. Bai, D.C. Yin, J.F. Ping, Y.B. Ying, C.H. Yang, S.X. Qu, **Z. Jia#**, Low-water-content polyelectrolyte hydrogels inspired by human epidermal stratum corneum, ***Cell Reports Physical Science***, 4, 101741 (2023)
6. Y.J. Cai, Z.H. Shen, **Z. Jia#**, Fracture toughness of hydrogel laminates: Experiments, theory and modeling, ***Journal of Applied Mechanics***, 91(1), 011006 (2023)
7. X.M. Shao, Y.J. Cai, S.Y. Yin, T.F. Li, **Z. Jia#**, Mechanics of Interfacial Delamination in Deep-Sea Soft Robots Under Hydrostatic Pressure, ***Journal of Applied Mechanics***, 90, 021009 (2023)
8. B.R.B. Yiming, Z.X. Zhang, N. Ali, Y.C. Lu, S.X. Qu, S.Z. Zhu#, C. Creton#, **Z. Jia#**, Designing Ionic Conductive Elastomers Using Hydrophobic Networks and Hydrophilic Salt Hydrates with Improved Stability in Air, ***Advanced Electronic Materials***, 2300069 (2023)
9. X.C. Hu, H. Zhu, R.W. Chen, S.D. Hu, **Z. Jia**, H.H. Yu, S.X. Qu, Design of 3D Magnetic Tactile Sensors with High Sensing Accuracy Guided by the Theoretical Model, ***Advanced Intelligent System***, 2200291 (2023)
10. J. Ma, D.C. Yin, Z. Sheng, J. Cheng, **Z. Jia#**, T. Li, S.X. Qu, Delayed Tensile Instabilities of Hydrogels, ***Journal of the Mechanics and Physics of Solids***, 168, 105052 (2022)
11. B.R.B. Yiming, Z.X. Zhang, Y.C. Lu, X.G. Liu, C. Creton#, S.Z. Zhu#, **Z. Jia#**, S.X. Qu, Molecular Mechanism Underpinning Stable Mechanical Performance and Enhanced Conductivity of Air-Aged Ionic Conductive Elastomers, ***Macromolecules***, 55, 11, 4665–4674 (2022)
12. W. Zhou, **Z. Jia#**, Pulling Actuation Enabled by Harnessing the Torsional Instability of Hyperelastic Soft Rods, ***Extreme Mechanics Letters***, 55, 101807 (2022)
13. S.Y. Yin*, **Z. Jia***, X.G. Li, J.K. Zhu, Y. Xu, T.F. Li, Machine-learning-accelerated design of functional structural components in deep-sea soft robots, ***Extreme Mechanics Letters***, 52, 101635 (2022)
14. S.M. Dou, Q. Tian, T. Liu, J. Xu, L.Y. Jing, C.H. Zeng, Q.H. Yuan, Y.H. Xu, **Z. Jia#**, Q. Cai, W.D. Liu, S.P. Silvae, Y.N. Chen#, J. Liu#, Stress-Regulation Design of Mesoporous Carbon

Spheres Anodes with Radial Pore Channels towards Ultra-stable Potassium-ion Batteries, ***Small Science***, 2200045 (2022)

15. Z.L. Han, P. Wang, Y.C. Lu, **Z. Jia**, S.X. Qu, W. Yang, A versatile hydrogel network–repairing strategy achieved by the covalent-like hydrogen bond interaction, ***Science Advances***, 8, eabl5066 (2022)
16. K.L. Cao, M. Wu, J.B. Bai, Z. Wen, J.W. Zhang, T.Y. Wang, M.W. Peng, T. Liu, **Z. Jia**, Z.Q. Liang, L. Jiang, Beyond Skin Pressure Sensing: 3D Printed Laminated Graphene Pressure Sensing Material Combines Extremely Low Detection Limits with Wide Detection Range, ***Advanced Functional Materials***, 2202360 (2022)
17. B.R.B. Yiming, Y. Han, Z.L. Han, X.N. Zhang, Y. Li, W.Z. Lian, M.Q. Zhang, J. Yin#, T.L. Sun#, Z.L. Wu, T.F. Li, J.Z. Fu, **Z. Jia#**, S.X. Qu, A Mechanically Robust and Versatile Liquid-Free Ionic Conductive Elastomer, ***Advanced Materials***, 2006111 (2021) **(ESI highly cited paper)**
18. B.R.B. Yiming, X. Guo, N. Ali, N. Zhang, X.N. Zhang, Z.L. Han, Z.L. Wu, X.L. Fan, **Z. Jia#**, and S.X. Qu, Ambiently and Mechanically Stable Ionogels for Soft Ionotronics, ***Advanced Functional Materials***, 2102773 (2021)
19. M.Q. Fang, T. Liu, Y. Xu, B.J. Jin, N. Zheng#, Y. Zhang, Q. Zhao, **Z. Jia**#, T. Xie#, Ultrafast Digital Fabrication of Designable Architectured Liquid Crystalline Elastomer, ***Advanced Materials***, 202105597 (2021)
20. Y. Zhang, K.K. Liu, T. Liu, C.J. Ni, D. Chen, J.M. Guo, C. Liu, J. Zhou, **Z. Jia**, Q. Zhao, P.J. Pan, T. Xie, Differential diffusion driven far-from-equilibrium shape-shifting of hydrogels, ***Nature Communications***, 12:6155 (2021)
21. G.R. Li, X.P. Chen, F.H. Zhou, Y.M. Liang, Y.H. Xiao, X.N. Cao, Z. Zhang, M.Q. Zhang, B.S. Wu, S.Y. Yin, Y. Xu, H.B. Fan, Z. Chen, W. Song, W.J. Yang, B.B. Pan, J.Y. Hou, W.F. Zou, S.P. He, X.X. Yang, G.Y. Mao, **Z. Jia**, H.F. Zhou, T.F. Li, S.X. Qu, Z.B. Xu, Z.L. Huang, Y.W. Luo, T. Xie, J. Gu, S.Q. Zhu, W. Yang, Self-powered soft robot in the Mariana Trench, ***Nature***, 591, 66–71 (2021)
22. **Z. Jia#**, T. Li#, Effect of interfacial stiffness on the stretchability of metal/elastomer bilayers under in-plane biaxial tension, ***Theoretical and Applied Mechanics Letters***, 11, 100247 (2021)
23. J.M. Guo, **Z. Jia#**, Stress Evolution during the Two-Step Charging of High-Capacity Electrode Materials, ***Journal of Power Sources***, 486, 229371 (2021)
24. B.R.B. Yiming, L. Wu, M.Q. Zhang, Z.L. Han, P. Zhao, T.F. Li, **Z. Jia#**, S.X. Qu, Highly Stretchable Bilayer Lattice Structures that Elongate via in-Plane Deformation, ***Advanced Functional Materials***, 30, 1909473 (2020)
25. X.G. Liu, J.M. Guo, T. Liu, J.H. Zhang, **Z. Jia#**, C.H. Zhang#, Mechanical Simulation Informed Rational Design of a Soft-and-Hard Double-Jacketed SnO_2 Flexible Electrode for High Performance Lithium-Ion Battery, ***Energy Storage Materials***, 35, 520-529 (2020)
26. J. Ma, **Z. Jia#**, S.X. Qu, A constitutive model for binary-solvent gels, ***Journal of Applied Mechanics***, 87(8), 081010 (2020)

27. Y.H. Liu#, Q.Z. Liu, J. Cheng, M.R. Chen, A.Y. Zhang, Z. Li, T. Li, T. Nilges, K. He#, **Z. Jia#**, C.W. Zhou#, Red-Phosphorus-Impregnated Carbon Nanofibers for Sodium-Ion Batteries and "Liquefaction" of Red Phosphorus, ***Nature Communications***, 11:2520 (2020)
28. M.W. Peng, D.L. Shi, Y.H. Sun, J. Cheng, B. Zhao, Y.M. Xie, J.C Zhang, W. Guo, **Z. Jia#**, Z.Q. Liang#, L. Jiang#, 3D Printed Mechanically Robust Graphene/CNT Electrodes for Highly Efficient Overall Water Splitting, ***Advanced Materials***, 1908201 (2020)
29. J. Cheng, **Z. Jia#**, T. Li#, A constitutive model of microfiber reinforced anisotropic hydrogels: with applications to wood-based hydrogels, ***Journal of the Mechanics and Physics of Solids***, 138, 103893 (2020)
30. Z.L. Han, P. Wang, G.Y. Mao, T.H. Yin, D.M. Zhong, B.R.B. Yiming, X.C. Hu, **Z. Jia**, G.D. Nian, S.X. Qu, W. Yang, A Dual pH-Responsive Hydrogel Actuator for Lipophilic Drug Delivery, ***ACS Applied Materials & Interfaces***, 12, 10, 12010-12017 (2020)
31. Y.M. Burebi, T. Liu, G.D. Nian, Z.L. Han, **Z. Jia#**, S.X. Qu, Mechanics-guided design of shape-morphing composite sheets with hard and soft materials, ***Extreme Mechanics Letters***, 35, 100643 (2020)
32. J.M. Guo, **Z. Jia#**, Nanoscale silicon-based actuators with extremely large actuation strain and extremely low driving voltage, ***Extreme Mechanics Letters***, 31, 100534 (2019)
33. M.W. Peng, Z. Wen, L.J. Xie, J. Cheng, **Z. Jia**, D.L. Shi, H.J. Zeng, B. Zhao, Z.Q. Liang, T. Li, L. Jiang, 3D Printing of Ultralight Biomimetic Hierarchical Graphene Materials with Exceptional Stiffness and Resilience, ***Advanced Materials***, 1902930 (2019)
34. **Z. Jia**, T. D. Nguyen, A Micromechanical Model for the Growth of Collagenous Tissues under Mechanics-Mediated Collagen Deposition and Degradation, ***Journal of the Mechanical Behavior of Biomedical Materials***, 98, 96-107 (2019)
35. Y.M. Burebi, **Z. Jia#**, S.Qu, A chemo-mechanical model for fully-coupled lithiation reaction and stress generation in viscoplastic lithiated silicon, ***Science China Technological Sciences***, 62, 1365-1374 (2019).
36. **Z. Jia**, T. Li, Bifurcation instability in substrate-supported metal layers under biaxial tensile loading, ***Journal of the Mechanics and Physics of Solids***, 126, 52–75 (2019)
37. J. Cheng, **Z. Jia#**, T. Li#, Delayed burst of a gel balloon, ***Journal of the Mechanics and the Physics of Solids***, 124, 143-158 (2019)
38. J. Cheng, **Z. Jia#**, T. Li#, Dielectric-elastomer-based capacitive force sensing with tunable and enhanced sensitivity, ***Extreme Mechanics Letters***, 21, 49-56 (2018)

Before ZJU

39. J.W. Song, C.J. Chen, S.Z. Zhu, M.W. Zhu, J.Q. Dai, U. Ray, Y.J. Li, Y.D. Kuang, Y.F. Li, N. Quispe, Y.G. Yao, A. Gong, U.H. Leiste, H.A. Bruck, J.Y. Zhu, A. Vellore, H. Li, M.L. Minus, **Z. Jia**, A. Martini, T. Li, L.B. Hu, Processing bulk natural wood into a high-performance structural material, ***Nature***, 554 (7691), 224 (2018)
40. H.Y. Guo, J. Cheng, J.Y. Wang, L. Wang, P. Huang, **Z. Jia**, X.Y. Chen, K.Y. Sui, T. Li, Z.H.

Nie, Reprogrammable ultra-fast shape-transformation of macroporous composited hydrogel sheets, ***Journal of Materials Chemistry B***, 5 (16), 2883-2887 (2017)

41. Y. Li, Z.L. Liu, **Z. Jia**, W.K. Liu, et al. Modular-based multiscale modeling on viscoelasticity of polymer nanocomposites, ***Computational Mechanics***, 59:187 (2017)
42. **Z. Jia**, W.K. Liu, Rate-dependent stress evolution in nanostructured Si anodes upon lithiation, ***Applied Physics Letters***, 109, 163903 (2016)
43. **Z. Jia**, T. Li, Intrinsic stress mitigation via elastic softening during two-step electrochemical lithiation of amorphous silicon, ***Journal of the Mechanics and the Physics of Solids***, 91, 278–290 (2016)
44. **Z. Jia**, W.K. Liu, Analytical model on stress-regulated lithiation kinetics and fracture of Si-C yolk-shell anodes for lithium-ion batteries, ***Journal of the Electrochemical Society***, 163 (6), A940-A946 (2016)
45. **Z. Jia**, T. Li, Failure mechanics of a wrinkling thin film anode on a substrate under cyclic charging and discharging, ***Extreme Mechanics Letters***, 8, 273-282 (2016)
46. H.L. Zhu*, S.Z. Zhu*, **Z. Jia*(co-first author)**, S. Parvinian, Y.Y. Li, O. Vaaland, L.B. Hu, T. Li, Anomalous scaling law of strength and toughness of cellulose nanopaper, ***Proceedings of the National Academy of Sciences,*** vol. 112 no.29, 8971-8976 (2015)
47. **Z. Jia**, T. Li, Stress-modulated driving force for lithiation reaction in hollow nano-anodes, ***Journal of Power Sources***, 275, 866–876 (2015)
48. X.G. Han*, Y. Liu*, **Z. Jia*(co-first author)**, Y.C. Chen, J.Y. Wan, N. Weadock, K.J. Gaskell, T. Li, L.B. Hu, Atomic-layer-deposition oxide nano-glue for sodium-ion batteries, ***Nano Letters***, 14(1), 139-147 (2014)
49. Z.J. Wei, **Z. Jia**, J. Athas, P. Huang, T. Li, C.Y. Wang and Z.H. Nie, Hybrid hydrogel sheets that undergo pre-programmed shape transformations, ***Soft Matters***, 10, 8157-8162 (2014)
50. J.Y. Wan*, A.F. Kaplan*, **Z. Jia*(co-first author)**, X.G. Han, Y.C. Chen, N. Faenza, N.J. Weadock, T. Li, J. Guo, L.B. Hu, Two dimensional silicon nanowalls for lithium ion batteries, ***Journal of Materials Chemistry A***, 2, 6051-6057 (2014)
51. H.L. Zhu*, **Z. Jia*(co-first author)**, Y.C. Chen, J.Y. Wan, N.J. Weadock, Y.Y. Li, O. Vaaland, X.G. Han, T. Li, L.B. Hu, Tin anode for sodium-ion batteries using natural wood fiber as a mechanical buffer and electrolyte reservoir, ***Nano Letters***, 13(7), 3093-3100 (2013) **(ESI hot paper)**
52. **Z. Jia**, T. Li, Necking limit of substrate-supported metal layers under biaxial in-plane loading, ***International Journal of Plasticity***, 51, 65-79 (2013)
53. C.F. Sun*, K. Karki*, **Z. Jia*(co-first author)**, H.W. Liao, Y. Zhang, J. Cummings, T. Li, Y. Qi, Y.H. Wang, A beaded-string silicon anodes, ***ACS Nano***, 7(3), 2717-2724 (2013)
54. K. Karki, E. Epstein, J. Cho, **Z. Jia**, T. Li, S.T. Picraux, C. Wang, J. Cumings, Lithium-assisted electrochemical welding in silicon nanowire battery electrodes, ***Nano Letters***, 12, 1392-1397 (2012)

55. C. Peng, **Z. Jia**, D. Bianculli, T. Li, J. Lou, In situ electro-mechanical experiments and mechanics modeling of fracture in indium tin oxide-based multilayer electrodes, ***Advanced Engineering Materials***, 15:250-256 (2012)
56. **Z. Jia**, C. Peng, J. Lou, T. Li, A map of competing buckling-driven failure modes of substrate-supported thin brittle films, ***Thin Solid Films*****,** 520, 6576-6580 (2012)
57. O. Graudejus, **Z. Jia**, T. Li, S. Wagner, Size-dependent rupture strain of elastically stretchable metal conductors, ***Scripta Materilia***, 66, 919-922 (2012)
58. C. Peng, **Z. Jia**, D. Bianculli, T. Li, J. Lou, In situ electro-mechanical experiments and mechanics modeling of tensile cracking in indium tin oxide thin films on polyimide substrates, ***Journal Applied Physics***, 109, 103530 (2011)
59. **Z. Jia**, M. B. Tucker, T. Li, Failure mechanics of organic-inorganic multilayer permeation barriers in flexible electronics, ***Composites Science and Technology***, 71, 365-372 (2011)

PRESENTATIONS

Invited Presentations at Peer Institutes

1. Mechanics and design of novel functional hydrogels, Department of Mechanical Engineering, *Ningbo University*, Ningbo, China, April 2023
2. Mechanics and design of soft materials and flexible structures, *Department of Mechanical Engineering, Zhejiang University of Technology*, Hangzhou, China, November 2021
3. Mechanics and design of soft materials and flexible structures, *Department of Mechanics and Aerospace Engineering, Southern University of Science and Technology*, Shenzhen, China, March 2021
4. Extreme deformation in highly deformable materials: from fundamental physics to advanced applications, *School of Mechanical and Aerospace Engineering, Nanyang Technological University, Singapore*, November 2016
5. Electro-chemo-mechanics in advanced materials: lithium-ion batteries and beyond, *Department of Engineering Mechanics, Zhejiang University, China*, May 2016
6. Electro-chemo-mechanics in advanced materials: lithium-ion batteries and beyond, *University of Michigan – Shanghai Jiao Tong University Joint Institute, China*, May 2016

Invited Conference Presentations

1. Z. Jia, Fracture and growth mechanics of hydrogels, *Symposium on mechanics and advanced materials*, Xi'an, 2023
2. Z. Jia, Fracture mechanics of bilayer soft materials, *The 3rd national conference on damage and fracture mechanics*, Hefei, 2023
3. Z. Jia, Damage mechanics of strong and tough ionic conductive soft materials, *The 3rd national conference on damage and fracture mechanics*, Hefei, 2023
4. Z. Jia, Mechanics of strong and tough ionic conductive soft materials, *1st National Conference on Smart Materials and Structural Systems*, Suzhou, 2023

5. Z. Jia, Fracture mechanics of bilayer soft materials, *1st National Conference on Smart Materials and Structural Systems*, Suzhou, 2023
6. Z. Jia, Low-water-content polyelectrolyte hydrogels inspired by human epidermal stratum corneum, *The 11th international conference on advanced fibers and polymer materials*, Shanghai, 2023
7. Z. Jia, Fracture and growth mechanics of hydrogels, *Conference on new advances in continuum mechanics and applied mathematics*, Tianjin, 2023
8. Z. Jia, Fracture and growth mechanics of hydrogels, *The 2nd Forum on Mechanics of Soft Matter and Flexible Structures*, Hangzhou, 2023
9. Z. Jia, Fracture mechanics of bilayer soft materials, *The 10th National Conference for Young Scholars in Solid Mechanics*, Wenchang, 2023
10. Z. Jia, Fracture and instability of hydrogels, *The 2nd Workshop on the Mechanics of Soft Matter*, Harbin, 2022
11. Z. Jia, All-solid-state ionic conductive elastomers, *The 111th Youth Academic Salon of the Chinese Society of Theoretical and Applied Mechanics*, Hangzhou, 2020
12. Z. Jia, Delayed instability of hydrogels, *The 9th National Conference for Young Scholars in Solid Mechanics*, Hangzhou, 2020
13. Z. Jia, Constitutive models and deformation mechanism of novel hydrogels, *The Chinese Congress of Theoretical and Applied Mechanics*, Hangzhou, 2019
14. Z. Jia, Bifurcation instability in substrate-supported metal layers under biaxial tensile loading, *The Chinese Congress of Theoretical and Applied Mechanics*, Hangzhou, 2019
15. Z. Jia, Electro-Chemo-Mechanics in Energy Materials, *19th East China Conference on Solid Mechanics*, Nanchang, 2018
16. Z. Jia, T. Li, Intrinsic stress mitigation via elastic softening during two-step electrochemical lithiation of amorphous silicon, *SES2016*, University of Maryland, College Park, MD, 2016

Conference Presentations

1. Z. Jia, Low-water-content polyelectrolyte hydrogels inspired by human epidermal stratum corneum, *The 1st Mechanics Cross Frontier Research Forum*, Nanjing, 2023
2. Z. Jia, All-solid-state ionic conductive elastomers, *Smart Wearable Technology Innovation Forum*, Suzhou, 2021
3. Z. Jia, Mechanics and Design of Soft Materials and Flexible Structures, *Youth Academic Salon of Solid Mechanics*, Online, 2020
4. Z. Jia, Delayed Burst of Gel Balloon, *2018 National Conference on Solid Mechanics*, Harbin, 2018
5. Z. Jia, Intrinsic stress mitigation via elastic softening during two-step electrochemical lithiation of amorphous silicon, *2018 National Conference on Solid Mechanics*, Harbin, 2018
6. Z. Jia, T. D. Nguyen, Micromechanical modeling study of concurrent synthesis and enzymatic degradation of collagenous materials, *SES2017*, Northeastern University, Boston, MA, 2017

7. Z. Jia, W.K. Liu, Rate-dependent stress evolution in nanostructured Si anodes upon lithiation, *SES2016*, University of Maryland, College Park, MD, 2016
8. Z. Jia, T. Li, Failure Mechanics of a wrinkling thin film anode on a substrate under cyclic charging and discharging, *SES2016*, University of Maryland, College Park, MD, 2016
9. Z. Jia, T. Li, Wrinkling, ratcheting and necking: A failure mode of tin anodes in sodium-ion battery, *USNCTAM 2014*, Michigan State University, East Lansing, MI, 2014
10. Z. Jia, T. Li, Stress-modulated driving force for lithiation reaction in hollow nano-anodes, *Materials Research Society 2013 Fall Meeting*, Boston, MA, 2013
11. Z. Jia, C.F. Sun, K. Karki, H.W. Liao, Y. Zhang, J. Cummings, T. Li, Y. Qi, Y.H. Wang, A beaded-string silicon anode for lithium ion battery, *ASME International Mechanical Engineering Congress,* San Diego, CA, 2013
12. Z. Jia, T. Li, Bifurcation instability in substrate-supported metal layers under biaxial loading, *ASME International Mechanical Engineering Congress,* San Diego, CA, 2013
13. Z. Jia, Z.J. Wei, J. Athas, P. Huang, T. Li, C.Y. Wang and Z.H. Nie, Programmable morphologies of chemical gel-physical gel hybrids, *ASME International Mechanical Engineering Congress,* San Diego, CA, 2013
14. Z. Jia, J.Y. Wan, A.F. Kaplan, X.G. Han, Y.C. Chen, N. Faenza, N.J. Weadock, T. Li, J. Guo, L.B. Hu, Silicon nanowall anodes for lithium-ion batteries, *ASME International Mechanical Engineering Congress,* San Diego, CA, 2013
15. Z. Jia, T. Li, Stress-modulated driving force for lithiation reaction in hollow nano-anodes, *ASME 2013 International Mechanical Engineering Congress,* San Diego, CA, 2013
16. Z. Jia, T. Li, Stress-modulated driving force for lithiation reaction in hollow nano-anodes, *SES50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting*, Providence, RI, 2013
17. Z. Jia, T. Li, Bifurcation instability in substrate-supported metal layers under biaxial loading, *SES50th Annual Technical Meeting and ASME-AMD Annual Summer Meeting*, Providence, RI, 2013
18. Z. Jia, T. Li, Necking limit of substrate-supported thin metal films under biaxial deformation, *Materials Research Society 2012 Fall Meeting*, Boston, MA, 2012
19. Z. Jia, T. Li, C. Peng, H. Neilson, J. Lou, Indium tin oxide-based multi-layers: A solution toward transparent conducting electrodes of high electro-mechanical durability, *Materials Research Society 2012 Fall Meeting*, Boston, MA, 2012
20. Z. Jia, T. Li, Necking limit of polymer-supported metal films under arbitrary in-plane loads, *ASME 2012 International Mechanical Engineering Congress & Exposition*, Houston, TX, 2012
21. Z. Jia, T. Li, C. Peng, H. Neilson, J. Lou, In situ electromechanical experiments and mechanics modeling of fracture in indium tin oxide-based multilayer electrodes, *ASME 2012 International Mechanical Engineering Congress & Exposition*, Houston, TX, 2012

22. Z. Jia, M. B. Tucker, T. Li, Failure mechanics of functional hybrid multilayers in flexible electronics, *NSF CMMI Grantee Conference*, Boston, MA, 2012
23. Z. Jia, T. Li, Cheng Peng, Dan Bianculli, Jun Lou, In situ experiments and mechanics modeling of tensile cracking and buckling-driven failure in indium tin oxide thin films on polyimide substrates, *ASME 2011 International Mechanical Engineering Congress & Exposition*, Denver, CO, 2011
24. Z. Jia, M. B. Tucker, T. Li, Failure mechanics of multilayer permeation barriers in flexible electronics, *NSF CMMI Grantee Conference*, Atlanta, GA, 2011

TEACHING EXPERIENCE

- 261C0060: Theoretical Mechanics, Zhejiang University, Fall & Winter 2023
- 261C0060: Theoretical Mechanics, Zhejiang University, Fall & Winter 2022
- 26120450: Mechanics of Materials, Zhejiang University, Spring & Summer 2022 (co-instructor)
- 261C0060: Theoretical Mechanics, Zhejiang University, Fall & Winter 2021
- 26120450: Mechanics of Materials, Zhejiang University, Spring & Summer 2021 (co-instructor)
- 261C0062: Theoretical Mechanics, Zhejiang University, Fall & Winter 2020
- 261C0062: Theoretical Mechanics, Zhejiang University, Fall & Winter 2019
- 261C0062: Theoretical Mechanics, Zhejiang University, Fall & Winter 2018
- ENME670: Continuum Mechanics, University of Maryland, Fall 2013 (co-instructor)

GRADUATE STUDENTS SUPERVISED

Ph.D. Student

- Zilong Han, PhD (co-advised with Prof. Shaoxing Qu), 2017-2022, Now Research assistant professor at Zhejiang University
- Xiaocheng Hu, PhD (co-advised with Prof. Shaoxing Qu), 2017-2022
- Jie Ma, PhD, 2018-2023
- Burebi Yiming, PhD (Co-advised with Prof. Costantino Creton at ESPCI Paris), 2019-
- Zhi Sheng, PhD, 2019-
- Yijie Cai, PhD, 2020-
- Daochen Yin, PhD, 2021-
- Zihang Shen, PhD, 2021-
- Siqi Yan, PhD, 2022-
- Zheyu Dong, PhD, 2023-
- Peng Ding, PhD, 2023-

- Yuren Yin, PhD, 2024-

Master Student

- Jiamei Guo, MS, 2018-2021, Now at Zhejiang Windey Co., Ltd, Hangzhou
- Shunyu Yin, MS student (co-advised with Prof. Tiefeng Li), 2019-2022, Now Ph.D. student at Brown University, USA
- Tao Liu, MS student, 2019-2022, Now at HONOR, Shenzhen
- Xianmin Shao, MS student, 2020-2023, Now at Ant Group, Hangzhou
- Jiabao Bai, MS student, 2021-
- Kunqing Yu, MS student, 2023-
- Qier Zhang, MS student, 2024-

Research Assistant

- Wei Zhou, 2021-2022, Now Ph.D. student at Imperial College London

SYNERGISTIC ACTIVITIES

Editorial Board

- Special EML Editor for EML Webinars – Young Researchers Forum, Extreme Mechanics Letters, 2023-Present
- Editor, iMechanica Journal Club, 2020-2021
- Youth Editorial Board Member, Extreme Mechanics Letters, 2023-Present
- Youth Editorial Board Member, Soft Science, 2022-Present
- Youth Editorial Board Member, International Journal of Smart and Nano Materials, 2023-Present

Conference, Symposium and Webinar Organizer

- Webinar organizer, EML Webinar Series – Young Researchers Forum, Online, 2023.09, 2023.10, 2023.11
- Conference co-organizer, The 2nd National Conference on Mechanics of Soft Matter, Hangzhou, 2023.11
- Symposium co-organizer, Symposium on Mechanics of Soft Materials and Flexible Structures, Beijing Cross-Science Conference, Beijing, 2023.06
- Conference co-organizer, The 117th Youth Academic Salon of the Chinese Society of Theoretical and Applied Mechanics, Online, 2022.05
- Conference co-organizer, National Conference for Young Scholars in Solid Mechanics, Hangzhou, 2020.10
- Discussion leader, EML Webinar by Prof. Teng Li, Online, 2020.07
- Co-organizer, Symposium on Mechanics and Electrochemistry of Energy Materials, SES 53rd Annual Technical Meeting, College Park, 2016.10

- Co-organizer, Symposium on Mechanics of Integrated Structures and Materials in Advanced Technologies, ASME International Mechanical Engineering Congress, Houston, 2015.11

Reviewer for 30+ Journals

Journal of the Mechanics and Physics of Solids, Nature Communications, Science Advances, Advanced Materials, Advanced Functional Materials, ACS Applied Materials & Interfaces, Extreme Mechanics Letters, International Journal of Mechanical Sciences, Journal of Materials Chemistry A, International Journal of Solids and Structures, Mechanics of Materials, Computational Mechanics, International Journal of Fracture, Science China Technological Sciences, Acta Mechanica Sinica, Soft Science, Small, Journal of The Electrochemical Society, Scientific Reports, Nanotechnology, Nanoscale, Physical Chemistry Chemical Physics, Chemical Communications, RSC Advances, Journal of Physics D: Applied Physics, Microelectronics Reliability, New Journal of Chemistry, Journal of Electrochemical Energy Conversion and Storage, Materials Research Express, Frontiers in Robotics and AI

VITA

Dr. Zheng Jia received his Ph.D. degree in Mechanics of Materials from the University of Maryland – College Park in December 2014. Afterward, he was a postdoctoral researcher at Northwestern University and Johns Hopkins University for two years and one year, respectively. Dr. Jia joined the Department of Engineering Mechanics at Zhejiang University as Assistant Professor in December 2017. He became Associate Professor with tenure in January 2021. Starting from January 2022, he is serving as the associate director of the institute of applied mechanics at Zhejiang University.

Dr. Jia is now leading a multidisciplinary research group to advance the mechanics of soft materials. His lab is currently working on three major research thrusts: 1) mechanics of hydrogels; 2) design and synthesis of functional hydrogels and elastomers; 3) manufacture of ionotronic devices and flexible structures. Representative work of his group includes the constitutive model of anisotropic hydrogels, fracture of bilayer soft materials, delayed tensile instability of hydrogels, liquid-free ionic conductive elastomers, as well as mechanics of novel electrodes for lithium-ion batteries. Dr. Jia has published about 59 peer-reviewed journal articles so far (with more than 5000 citations according to Google Scholar), many of which have appeared in high-impact journals such as Nature, Nature Communications, Advanced Materials, Proceedings of the National Academy of Sciences of the United States of America (PNAS), Nano Letters, ACS Nano, and the Journal of Mechanics and Physics of Solids. His current h-index is 26. He has been honored with the Extreme Mechanics Letters Young Investigator Awards.

Dr. Jia has been very active in serving the community. He is currently the special EML editor, and the youth editorial board member of Extreme Mechanics Letters and Soft Science. He has been the editor of the iMechanica Journal Club from 2020 to 2021. Dr. Jia has organized several

domestic conferences and symposia for international conferences. He has served as the technical reviewer for many peer-reviewed journals including Nature Communications, Science Advances, Advanced Materials, Advanced Functional Materials, ACS Nano, ACS Applied Materials & Interfaces, Extreme Mechanics Letters, and so on.