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Education

Ph.D. in Mechanical Engineering (06/1997)
Northwestern University, Evanston, IL

M.S. in Aerospace Engineering (05/1993)
University of Florida, Gainesville, FL

M.S. in Computational Mechanics (06/1989)
Huazhong University of Science and Technology, Wuhan, China

B.S. in Mechanical Engineering (06/1982)
East China University of Science and Technology, Shanghai, China

Current Research Interests

2D material-based composites and high performance cementitious materials, 3D printing of amorphous and polymeric materials; Atomistic and multiscale simulations; Computational nonlocal fluid and solid mechanics; Dislocation pattern dynamics and multiscale defect mechanics; Engineering applications of artificial intelligence and machine learning methods; Micromechanics and nanomechanics of materials; Data-driven computational modeling, simulation and design, and Soft matter mechanics and physics.

Professional Experience

07/2010-present <i>Full Professor</i>	University of California	Berkeley, CA
07/2005 - 06/2010 <i>Associate Professor</i>	University of California	Berkeley, CA
07/2000 - 07/2005 <i>Assistant Professor</i>	University of California	Berkeley, CA
06/1997 - 06/2000 <i>Post Doctoral Fellow</i>	Northwestern University	Evanston, IL
09/1982-09/1986 <i>Assistant Engineer</i>	Wuhan Material Protection Research Institute	Wuhan, China

Honors and Awards

- Fellow of Asia-Pacific Artificial Intelligence Association (AAIA)[2024];
- Distinguished Fellow of IETI (International Engineering and Technology Institute) [2022];
- IACM (International Association of Computational Mechanics) Fellows Award [2017];
- The Best Paper Award in the 22th Conference of Japanese Society for Computational Engineering and Science [2017];
- Distinguished Fellow of ICCES (International Conference of Computing for Engineering and Sciences) [2014];

- The ICACM Computational Mechanics Award (International Chinese Association of Computational Mechanics) [2013];
- The USACM Fellows Award (The United States Association of Computational Mechanics) [2013];
- A. Richard Newton Research Breakthrough Award [2008];
- National Science Foundation CAREER Award [2003];
- Atanasoff Best Paper Award [1999] in *The Fifth NASA National Symposium on Large-Scale Analysis, Design, and Intelligent Synthesis Environments*
- Graham-Cabell Fellowship [1996];
- Walter P. Murphy Graduate Fellowship [1995];
- Sigma Gamma Tau Aerospace Engineering Honor Society [1993]

Professional Society

A member of the following professional organizations:

- Member of Sigma Xi: The Scientific Research Honor Society [2021-];
- Ordinary Member of General Council of International Association for Computational Mechanics (IACM) [Since 2017-];
- Member of the USACM Executive Council [Since 2016];
- American Nano Society [Since 2011];
- Member of ASCE EMI Biomechanics Committee [Since 2007];
- MRS Material Research Society [Since 2010];
- ASCE Engineering Mechanics Institute [Since 2008];
- American Society of Civil Engineers [Since 2008];
- American Society of Mechanical Engineers [Since 2004];
- United States Association of Computational Mechanics (USACM) [Since 1995]

Editorial Board

- Editor-in-Chief, *CMES: Computer Modeling in Engineering & Sciences* (2018-)
- Editor-in-Chief, *Journal of Micromechanics and Molecular Physics* (2016-),
- Subject Editor, *Engineering Failure Analysis* (2024-),
- Editor, *Acta Mechanica* (2021-);
- Associate Editor, *Scientific Reports* (2023-).

Synergistic Activities

- Expert Reviewer for European Research Council (ERC) [2007-2012];
- National Science Foundation Review Panel [2006][2008][2010][2011][2012][2013][2014][2016][2023];
- Member of the Research Impact Fund Committee of the Research Grants Council (RGC) of Hong Kong (2016-Present);
- Swiss National Science Foundation Review Panel [2024]

Graduate Advising

- Dr. Daniel C. Simkins, Jr., graduated in May 2004, and is now an Associate Professor at the University of South Florida, Tampa, FL, USA;
- Dr. Albert C. To, graduated in November 2005, and is now a Chair Professor at the University of Pittsburgh, Pittsburgh, PA, USA, (co-advisor: Professor S. D. Glaser);
- Dr. Xiaohu Liu, graduated in August 2006, and is now an finite element analyst at National Transportation Safety Board, Washington, D.C.;
- Dr. Roger A. Sauer, graduated in December, 2006, and is now a professor and group leader in RWTH Aachen University, Aachen, Germany;
- Mr. Jinshu Zhang, graduate in May 2012 with a degree of MS in Applied Science and Technology;
- Dr. Hiroyuki Minaki, graduated in May 2013, and is now a senior engineer at the Bridgestone Tires Company, Japan (co-advisor: Professor T. Zohdi);.
- Dr. Houfu Fan, graduated in May 2014, and is now a senior engineer at Software Development Engineer-Distributed Systems, Pleasanton, California.
- Dr. Qi Tong, graduated in May 2016, and is now an associate professor at Fudan University.
- Dr. Qingsong Tu, graduated in May 2017, and is now an assistant professor at Rochester Institute of Technology (RIT).
- Dr. Dandan Lyu, graduated in May 2018, and is now now a research engineer at LS-DYNA ANSYS, Livermore, California.
- Dr. Tiange (Tina) Li, graduated in May 2019, and now is an assistant engineer in Silicon Valley, California.
- Mr. Wice Ibrahim, graduated in May 2020, with an MS degree in Civil Engineering.
- Dr. Yuxi Xie, graduated in May 2021, and now a research engineer at LS-DYNA ANSYS, Livermore, California.
- Dr. Chao Wang, graduated in May 2022, and now a research engineer at ANSYS, San Jose, California.
- Dr. Caglar Tamur, graduated in May 2024, is now a postdoctoral fellow in the University of California at San Diego.
- Dr. Chengyao Liang, graduated in May 2024, is now a postdoctoral fellow in Stanford University.
- Ziland Zhang, graduate in December 2024, is now an engineer in Huawei; (co-advisor: Professor Grace Gu).
- Qi Zheng, graduated in December 2024, is now a postdoctoral fellow in Stanford University.

Post Doctoral Researcher Mentoring

- Dr. Ni Sheng (2006-2007), now an Associate Professor at the Macau University of Science and Technology;
- Dr. Jing Qian (2009-2010), now a Senior engineer at CFD Research Corporation at Huntsville, Alabama;
- Dr. Xiaowei Zeng (2008-2011), now an Associate professor at the University of Texas at San Antonio, TX ;
- Dr. Bo Ren (2009-2014), now a senior engineer at LS-DYNA, Livermore, California;
- Dr. Houfu Fan (2014- 2016), now a senior engineer at LS-DYNA, Livermore, California;
- Dr. Maryam Bitaraf (2014-2016), now an assistant professor at the University of Tehran;
- Dr. Shaofei Ren (2017-2019), now an associate professor at Harbin Engineering University, China;
- Dr. Lai Xin (2018-2021), now an associate professor at Wuhan University of Technology, China;
- Dr. Dana Bishara (2021-)
- Dr. Yongzhen Jia (2022-)
- Dr. Fang Xie (2024-)

Publications in Peer Reviewed Archive Journals

Up to the 10th December 2024, based on *Google Scholar*, the total citation numbers on referred publications (monographs and peer-reviewed journal papers) are over 19000 times with an h-index 61.

<http://scholar.google.com/citations?user=LIVqPuwAAAAJ&hl=en&oi=ao>

1. Vu-Quoc, L. and S. Li [1993] “Invariant-conserving finite difference algorithms for the nonlinear Klein-Gordon equation,” *Computer Methods in Applied Mechanics and Engineering*, **107**, 341-391;
2. **Vu-Quoc, L. and S. Li [1995] “Dynamics of sliding geometrically-exact beams: Large angle maneuvers and nonlinear parametric resonance,”** *Computer Methods in Applied Mechanics and Engineering*, **120**, 65-118;
3. **Li, S. and L. Vu-Quoc [1995] “Finite difference calculus invariant structure of a class of algorithms for the nonlinear Klein-Gordon equation,”** *SIAM Journal on Numerical Analysis*, **32**, 1839-1875;
4. **Liu, W.-K., S. Jun, S. Li, J. Adee, and T. Belytschko,[1995] “Reproducing kernel particle methods for structural dynamics,”** *International Journal of Numerical Methods for Engineering*, **38**, 1655-1679;
5. **Li, S. and P. A. Mataga [1996] “Dynamic crack propagation in piezoelectric materials Part I: Electrode solution,”** *Journal of the Mechanics and Physics of Solids*, **44**, 1799-1830;

6. Li, S. and P. A. Mataga [1996] “**Dynamic crack propagation in piezoelectric materials Part II: Vacuum solution,**” *Journal of the Mechanics and Physics of Solids*, **44**, 1831-1866;
7. Li, S. [1996] “The electromagneto-acoustic surface wave in a piezoelectric medium : The Bleustein-Gulyaev mode,” *Journal of Applied Physics*, **80**, 5264-5269;
8. Li, S. and W.-K. Liu [1996] “**Moving least square reproducing kernel method (II) Fourier analysis,**” *Computer Methods in Applied Mechanics and Engineering*, **139**, 159-193;
9. Liu, W.-K., S. Li, and T. Belytschko [1997] “**Moving least square reproducing kernel method. (I) Methodology and convergence,**” *Computer Methods in Applied Mechanics and Engineering*, **143**, 113-154;
10. Li, S. and W. Shyy [1997] “On invariant integrals in the Marguerre-von Kármán shallow shell,” *International Journal of Solids and Structures*, **34**, 2927-2944;
11. Li, S. and W. K. Liu [1998] “Synchronized reproducing kernel interpolant via multiple wavelet expansion,” *Computational Mechanics*, **21**, 28-47;
12. Li, S. and W. K. Liu [1999] “**Reproducing kernel hierarchical partition of unity Part I: Formulations,**” *International Journal for Numerical Methods in Engineering*, **45**, 251-288;
13. Li, S. and W. K. Liu [1999] “**Reproducing kernel hierarchical partition of unity Part II: Applications,**” *International Journal for Numerical Methods in Engineering*, **45**, 289-300;
14. Liu, W.K. and S. Hao and T. Belytschko and S. Li and C. T. Chang [1999] “Multiple scale meshfree methods for damage fracture and localization,” *Computational Materials Science*, **16**, 197-205;
15. Li, S. [2000] “**The micromechanics of classical plates: A congruous estimate of overall elastic stiffness,**” *International Journal of Solids and Structures*, **37**, 5599-5628;
16. Li, S. [2000] “**On micromechanics of Reissner-Mindlin plates,**” *Acta Mechanica*, **142**, 47-99;
17. Li, S. and W.-K. Liu [2000], “**Numerical simulations of strain localization in inelastic solids using mesh-free methods,**” *International Journal for Numerical Methods in Engineering*, **48**, 1285-1309;
18. Danielson, K.T., S. Hao, W.-K. Liu, A. Uras, and S. Li [2000] “Parallel computation of meshless methods for explicit dynamic analysis,” *International Journal for Numerical Methods in Engineering*, **47**, 1323-1341;
19. Liu, W.-K., S. Hao, T. Belytschko, S. Li, and C.-T. Chang [2000] “Multiscale methods,” *International Journal for Numerical Methods in Engineering*, **47**, 1343-1361;
20. Li, S., W. Hao, and W.-K. Liu [2000] “**Mesh-free simulations of shear banding in large deformation**”, *International Journal of Solids and Structures* **37**, 7185-7206;

21. Li, S. [2000] "Transient wave propagation in a transversely isotropic piezoelectric half space," *ZAMP (Zeitschrift für angewandte Mathematik und Physik)*, **51**, 236-266;
22. Li, S. W. Hao and W.-K. Liu [2000] "Numerical simulations of large deformation of thin shell structures using meshfree methods," *Computational Mechanics*, **25**, 2/3 102-116.
23. Danielson, K.T., R. A. Uras, M. D. Adley, and S. Li [2000] "Large-scale application of some modern CSM methodologies by parallel computation," *Advances in Engineering Software*, **31**, 501-509;
24. Li, S., D. Qian, W.-K. Liu and T. Belytschko [2001] "A meshfree contact-detection algorithm", *Computer Methods in Applied Mechanics and Engineering*, **190**, 3271-3292;
25. Li, S. [2001] "On diffraction in a piezoelectric medium by half-plane: The Sommerfeld problem", *ZAMP (Zeitschrift für angewandte Mathematik und Physik)*, **52**, 101-134;
26. Li, S., W.-K. Liu, D. Qian, P. Guduru, and A. J. Rosakis [2001] "Dynamic shear band propagation and micro-structure of adiabatic shear band," *Computer Methods in Applied Mechanics and Engineering*, **191**, 73-92;
27. Song, N., D. Qian, J. Cao, W.-K. Liu, and S. Li [2001] "Effective model for prediction of springback in flanging," *ASME Journal of Engineering Materials and Technology*, **23**, 456-461;
28. Li, S. and W.-K. Liu [2002] "Meshfree particle methods and their applications," *Applied Mechanics Review*, **53**, 1-34;
29. Li, S. and D. C. Simkins Jr. [2002] "Conserving Galerkin weak formulations for computational fracture mechanics," *Communications in Numerical Methods in Engineering*, **18**, 835-850;
30. Li, S., Liu, W.-K., Rosakis, A., Belytschko, T. and W. Hao [2002] "Meshfree Galerkin simulations of dynamic shear band propagation and failure mode transition," *International Journal of Solids and Structures*, **39**, 1213-1240;
31. Li, S. [2003] "On global energy release rate of a permeable crack in a piezoelectric crack," *ASME Journal of Applied Mechanics*, **70**, 246-252;
32. Li, S. [2003] "On saturation-strip model of a permeable crack in a piezoelectric ceramic," *Acta Mechanica*, **165**, 47-71;
33. O'Sullivan, S., J. D. Bray, and S. Li [2003] "A new approach for calculating strain for particulate media," *International Journal for Numerical and Analytical Methods in Geomechanics*, **27**, 859-877;
34. Li, S. and E. F. Morgan [2003] "Micromechanics modeling of plastic yielding in a solid containing mode III cohesive cracks," *International Journal of Fracture*, **119**, L105-L112;
35. Simkins, Jr., D.C. and S. Li [2003] "Effective bending stiffness for plates with micro-cracks," *Archive of Applied Mechanics*, **73**, 282-309;

36. Wang, G. and S. Li [2003] "A penny-shaped cohesive crack model for material damage," *Theoretical and Applied Fracture Mechanics*, **42**, 303-316;
37. **Li, S. [2004] "On dual conservation laws in planar elasticity,"** *International Journal of Engineering Science*, **42**, **1215-1239**;
38. Li, S. and G. Wang [2004] "On damage theory of a cohesive medium," *International Journal of Engineering Science*, **42**, 861-885;
39. Liu, W.K., W. Han, H. Lu, S. Li, and J. Cao [2004] "Reproducing kernel element method Part I. Theoretical formulation," *Computer Methods in Applied Mechanics and Engineering*, **193**, 933-951;
40. **Li, S., H. Lu, W. Han, W. -K. Liu, and D. C. Simkins, Jr. [2004] "Reproducing kernel element method Part II. Globally conforming I^m/C^n hierarchies,"** *Computer Methods in Applied Mechanics and Engineering*, **193**, **953-987**;
41. Lu, H., Li, S., Simkins Jr., D.C., Liu, W.K. and J. Cao [2004] "Reproducing kernel element method Part III. Generalized enrichment and applications," *Computer Methods in Applied Mechanics and Engineering*, **193**, 989-1011;
42. Simkins, Jr., D.C., S. Li, H. Lu, and W.-K. Liu [2004] "Reproducing kernel element method Part IV. Globally compatible $C^n(n \geq 1)$ triangle hierarchy," *Computer Methods in Applied Mechanics and Engineering*, **193**, 1013-1034;
43. Li, S., A. Gupta, X. Liu, and M. Mahyari [2004] "Variational eigenstrain multiscale finite element method," *Computer Methods in Applied Mechanics and Engineering*, **193**, 1803-1824;
44. Li, S. [2004] "On dual conservation laws in linear elasticity: stress function formalism," *Nonlinear Dynamics*, **36**, 77-96;
45. Simonsen, B. C. and S. Li [2004] "Meshfree simulation of ductile fracture," *International Journal of Numerical Methods in Engineering*, **60**, 1425-1450;
46. Li, S. and A. Gupta [2004] "The Peierls stress of a screw dislocation in a piezoelectric medium," *Applied Physics Letters*, **85**, 2211-2213;
47. Li, S., G. Wang, and E. Morgan, [2004] "Effective elastic moduli of solids with cohesive microcracks," *European Journal of Mechanics A*, **23**, 925-933;
48. Li, S., X. Liu, and A. Gupta, [2005] "Smart element method I. Zienkiewicz-Zhu feedback," *International Journal for Numerical Methods in Engineering*, **62**, 1264-1294;
49. **Li, S., A. Gupta, and X. Markenscoff [2005] "Conservation laws of linear elasticity in stress formulations,"** *Proceedings of Royal Society of London A*, **461**, **99-116**;
50. Li, S. and B. C. Simonsen [2005] "Meshfree simulations of ductile crack propagation," *International Journal of Computational Engineering Science*, **6**, 1-25;

51. To, A. C. and S. Li [2005] “Perfectly matched multiscale simulations,” *Physical Review B*, **72**, Article No. 035414;
52. To, A. C., S. Li, and S. D. Glaser [2005] “On scattering in dissimilar piezoelectric materials by an interfacial crack,” *Quarterly Journal of Mechanics and Applied Mathematics*, **58**, 309-331;
53. Li, S., R. Sauer, and G. Wang [2005] “Circular inclusion in a finite elastic domain. I. The Dirichlet-Eshelby problem,” *Acta Mechanica*, **179**, 67-90;
54. Wang, G., S. Li, and R. Sauer [2005] “Circular inclusion in a finite elastic domain. II. The Neumann-Eshelby problem,” *Acta Mechanica*, **179**, 91-110;
55. Li, S. A. C. To, and S. D. Glaser [2005] “On the scattering in a piezoelectric medium by a crack,” *ASME Journal of Applied Mechanics*, **72**, 943-954;
56. Wang, G., X. Liu, S. Li, and N. Sitar [2005] “Smart element method II. Finite Eshelby formulation,” *International Journal for Numerical Methods in Engineering*, **64**, 1303-1333;
57. Simkins Jr., D.C. and S. Li [2005] “Meshfree simulations of thermo-mechanical ductile fracture,” *Computational Mechanics*, **38**, 235-249;
58. Li, S. and A. Gupta [2006] “On dual configurational forces,” *Journal of Elasticity*, **84**, 12-31;
59. Liu, X. and S. Li [2006] “A variational multiscale stabilized method for the Stokes flow problem,” *Finite Elements in Analysis and Design*, **42**, 580-591;
60. To, A. C., S. Li, and S. Glaser [2006] “Propagation of a mode-III interfacial conductive crack along a conductive interface between two piezoelectric half spaces,” *Wave Motion*, **43**, 369-386;
61. Li, S., X. Liu, A. Agrawal, and A. C. To [2006] “Perfectly matched multiscale simulations for discrete systems: Extension to multiple dimensions,” *Physical Review B*, **74**, 045418. *Virtual Journal of Nanoscale Science & Technology*, **14**, Issue 5;
62. Medyanik, S., W.-K. Liu, and S. Li [2007] “On criteria for dynamic adiabatic shear band propagation,” *Journal of Mechanics and Physics of Solids*, **55**, 1439-1461;
63. Li, S., C. Linder, and J. W. Foulk III, [2007] “On configurational compatibility and multiscale energy momentum tensors,” *Journal of Mechanics and Physics of Solids*, **55**, 980-1000;
64. Lee, C.-L. and S. Li [2007], “A half-space Peierls-Nabarro model and the mobility of screw dislocation in a thin film,” *Acta Materialia*, **55**, 2149-2157;
65. Sauer, R.A. and S. Li [2007] “A contact mechanics model for quasi-continua,” *International Journal for Numerical Methods in Engineering*, **71**, 931-962;

66. Sauer, R.A. and S. Li [2007] "An atomic interaction based continuum mechanics model for adhesive contact mechanics" *Finite Elements in Analysis and Design*, **43**, 384-396;
67. **Liu, X. and S. Li [2007] "Nonequilibrium multiscale computational model,"** *Journal of Chemical Physics*, **126**, article No. 124105;
68. Wang, G., S. Li, H.-N, Nguyen, and N. Sitar [2007] "Effective elastic stiffness for periodic masonry structures via eigenstrain homogenization," *ASCE Journal of Materials in Civil Engineering*, **19**, 269-277;
69. **Li, S., Sauer, R.A., and G. Wang [2007] "The Eshelby tensors in a finite spherical domain : I. Theoretical formulations,"** *ASME Journal of Applied Mechanics*, **74**, 770-783;
70. **Li, S., G. Wang, and R. Sauer [2007] "The Eshelby tensors in a finite spherical domain : II. Applications in homogenization,"** *ASME Journal of Applied Mechanics*, **74**, 784-797;
71. Li, S. [2007] "A Multiscale Griffith criterion," *Philosophical Magazine Letters*, **87**, 945-954;
72. **Sauer, R.A. and S. Li [2007] "An atomic interaction-based continuum model for computational multiscale contact mechanics,"** *Proceedings in Applied Mathematics and Mechanics(PAMM)*, **7**, 4080029-4080030;
73. Liu, X., S. Li, and N. Sheng [2008] "A cohesive finite element for quasi-continua," *Computational Mechanics*, **42**, 543-553;
74. Sauer, R.A. and S. Li [2008] "An atomistically enriched continuum model for nanoscale contact mechanics and its application to contact scaling," *Journal of Nanoscience and Nanotechnology*, **8**, 3757-3773;
75. Sheng, N. and S. Li [2008] "A nonequilibrium multiscale simulation of shock wave propagation," *Mechanics Research Communications*, **35**, 10-16;
76. Qian, D., T. Eason, S. Li, and W.K. Liu [2008] "Meshfree simulation of failure modes in thin cylinder subjected to combined loads of internal pressure and localized heat," *International Journal for Numerical Methods in Engineering*, **76**, 1159-1180;
77. Li, S., N. Sheng, and X. Liu [2008] "A non-equilibrium multiscale simulation paradigm," *Chemical Physics Letters*, **451**, 293-300;
78. Sauer, R.A., G. Wang, and S. Li [2008] "The composite Eshelby tensors and their applications to homogenization," *Acta Mechanica*, **197**, 63-96;
79. **Li, S. [2008] "On variational symmetry of defect potentials and multiscale configurational force,"** *Philosophical Magazine*, **88**, 1059-1084;

80. Lee, C.-L. and S. Li [2008] “The size effect of thin films on the Peierls stress of edge dislocations,” *Mathematics and Mechanics of Solids*, **13**, 316-335;
81. Sheng, N. and S. Li [2009] “A multiscale non-equilibrium molecular dynamics algorithm and its applications,” *International Journal of Applied Mechanics*, **1**, 405-420;
82. Li, S. and N. Sheng [2010] “On multiscale non-equilibrium molecular dynamics simulations”, *International Journal for Numerical Methods in Engineering*, **83**, 998-1038, DOI: 10.1002/nme.2849;
83. **Zeng, X. and S. Li [2010] “A multiscale cohesive zone model and simulations of fracture,”** *Computer Methods in Applied Mechanics and Engineering*, **199**, 547-556;
84. Ren, B. and S. Li [2010] “Meshfree simulations of plugging failures in high-speed impacts,” *Computers & Structures*, **88**, 909-923;
85. Liu, W.K., D. Qian, S. Gonella, S. Li, W. Chen, and S. Chirputkar [2010] “Multiscale methods for mechanical science of complex materials: Bridging from quantum to stochastic multiresolution continuum”, *International Journal for Numerical Methods in Engineering*, **83**, 1039C1080, DOI: 10.1002/nme.2915;
86. **Qian, J. and S. Li [2011] “Application of multiscale cohesive zone model to simulate fracture in polycrystalline solids,”** *ASME Journal of Engineering Materials and Technology*, **133**, No. 011010;
87. Ren, B., S. Li, J. Qian, and X. Zeng [2011] “Meshfree simulations of spall fracture,” *Computer Methods in Applied Mechanics and Engineering*, **200**, 797-811;
88. Ren, B., J. Qian, X. Zeng, A. K. Jha, S. Xiao, and S. Li [2011] “Recent Developments on thermo-mechanical simulations of ductile failure by meshfree method,” *CMES: Computer Modeling in Engineering & Sciences*, **71**, 253-277;
89. **Zeng, X. and S. Li [2011] “Multiscale modeling and simulation of soft adhesion and contact of stem cells,”** *Journal of the Mechanical Behavior of Biomedical Materials*, **4**, 180-189;
90. Zeng, X. and S. Li [2011] “Modeling and simulation of substrate elasticity sensing in stem cells,” *Computer Methods in Biomechanics and Biomedical Engineering*, **14**, 447-458.
91. **Zeng, X. and S. Li [2012] “A three dimensional soft matter cell model for mechanotransduction,”** *Soft Matter*, **8**, 5765-5778, DOI: 10.1039/c2sm07138j.
92. He, M. and S. Li [2012] “An embedded atom hyperelastic constitutive model and cohesive finite element method,” *Computational Mechanics*, **49**, 337-355;
93. **Li, S., X. Zeng, B. Ren, J. Qian, J. Zhang, and A.J. Jha [2012] “An atomistic-based interphase zone model for crystalline solids,”** *Computer Methods in Applied Mechanics and Engineering*, **229-232**, 87-109. DOI: 10.1016/j.cma.2012.03.023

94. **Ren, B. and S. Li [2012]** “Modeling and simulation of large-scale ductile fracture in plates and shells,” *International Journal of Solids and Structures*, **49**, 2373-2393.
95. **Liu, L. and S. Li [2012]** “A finite temperature multiscale interphase finite element method and simulations of fracture,” *ASME Journal of Engineering Materials and Technology*, **134**, No. 031014.
96. Zeng, X. and S. Li [2012] “Application of a multiscale cohesive zone method to model composite materials,” *International Journal of Multiscale Computational Engineering*, **10**, 391-405; DOI: 10.1615/IntJMultCompEng.v10.i5
97. **Ren, B. and S. Li [2013]** “A three-dimensional atomistic-based process zone finite element simulation of fragmentation in polycrystalline solids,” *International Journal for Numerical Methods in Engineering*, **93**, 989-1014; DOI: 10.1002/nme.4430.
98. Fan, H., C. Shi, and S. Li [2013] “Application of multiscale process zone model to simulate fracture in polycrystalline solids,” *Journal of Multiscale Modeling*, **5**, 1350015.
99. Tu, Q.-S., M. Lee, S. Zhang, and S. Li [2014] “Molecular dynamics simulations of ions diffusion in carbon nanotubes embedded in cell,” *Computer Modeling in Engineering and Science*, **98**, 247-259.
100. Zeng, X. and S. Li [2014] “A biomechanical cell model by liquid crystal elastomers,” *ASCE Journal of Engineering Mechanics*, **140** (4), Article No. 04013003.
101. Li, S. and Q. Tong [2014] “On higher-order quantum stress,” *Acta Mechanica*, **225**, 1235-1243.
102. **Li, S., B. Ren and H. Minaki [2014]** “Multiscale Crystal Defect Dynamics: A Dual-Lattice Process Zone Model,” *Philosophical Magazine*, **94**(13), 1414-1450.
103. **Minaki, H. and S. Li [2014]** “Multiscale modeling and simulation of dynamic wetting,” *Computer Methods in Applied Mechanics and Engineering*, **273**, 274-302.
104. Chen, Z., H. Cao, H. Zhu, J. Hu and S. Li [2014] “A simplified structural mechanics model for cable-truss footbridges and its implications for preliminary design,” *Engineering Structures*, **68**, 121-133.
105. Ren, B. and S. Li [2014] “Multiscale modeling and prediction of bonded joint failures by using an adhesive process zone model,” *Theoretical and Applied Fracture Mechanics*, **72**, 76-88.
106. **Fan, H. and S. Li [2014]** “Modeling microtubule cytoskeleton via an active liquid crystal elastomer model,” *Computational Materials Science*, **96**, Part B, 559-566.
107. Ren, B., H. Fan, G. L. Bergel, R. A. Regueiro, X. Lai, and S. Li [2014], “A peridynamics-SPH coupling approach to simulate soil fragmentation induced by shock waves,” *Computational Mechanics*, **55**, 287-302, DOI 10.1007/s00466-014-1101-6.
108. Lai, X., B. Ren, H. Fan, S. Li, C. T. Wu, R. A. Regueiro, and L. Liu [2014], “Peridynamics simulations of geomaterial fragmentation by impulse loads,” *International Journal for Numerical and Analytical Methods in Geomechanics*, **39**, 1304-1330, DOI: 10.1002/nag.2356.

109. **Li, S. and Q. Tong [2015]** “**A concurrent multiscale micromorphic molecular dynamics,**” *Journal of Applied Physics*, **117**, No. **154303**, DOI:10.1063/1.4916702.
110. **Fan, H. and S. Li [2015]** “**Modeling universal dynamics of cell spreading on elastic substrates,**” *Biomechanics and Modeling in Mechanobiology (BMMB)*, **14**, **1265-1280**, (DOI) **10.1007/s10237-015-0673-1**.
111. Chen, Z., H. Cao, K. Ye, H. Zhu and S. Li [2015] “An improved particle swarm optimization (IPSO)-based form-finding method for suspension bridge installation analysis,” *ASCE Journal of Computing in Civil Engineering*, **29**, No. 04014047, DOI: 10.1061/(ASCE)CP.1943-5487.0000354.
112. Shi, C., H. Fan, and S. Li [2015] “Interphase model for effective moduli of nanoparticle reinforced composites,” *ASCE Journal of Engineering Mechanics*, **141**, 1350015. DOI:10.1061/(ASCE)EM.1943-7889.0000958.
113. **Li, S. and H. Fan [2015]** “**On multiscale moving contact line theory**” *Proceedings of Royal Society of London A*, **471**, No. **20150224**.
114. Tong, Q. and S. Li [2015] “A multiscale molecular dynamics allowing macroscale mechanical loads,” *European Physics Letters*, **110**, No. 60005.
115. Yang, H., Z. Chen, S. Li, H. Zhang and J. Fan [2015] “An integrated coupling element for vehicle-rail-bridge interaction system with a non-uniform continuous bridge,” *Acta Mechanica Solida Sinica*, **28**, 313-330.
116. Fan, H. and S. Li [2015] “Multiscale cohesive zone modeling of crack propagations in polycrystalline solids,” *Gesellschaft für Angewandte Mathematik und Mechanik (GAMM)*, **38**, 268-284.
117. **Tong, Q. and S. Li [2015]** “**From molecular systems to continuum solids: A multiscale structure and dynamics,**” *Journal of Chemical Physics*, **143**, No. **064101**; DOI: **10.1063/1.4927656**.
118. Fan, H., G. L. Bergel and S. Li [2015] “A hybrid Peridynamics-SPH simulation of soil fragmentation by blast loads of buried explosive,” *International Journal of Impact Engineering*, **87**, 14-27; DOI:10.1016/j.ijimpeng.2015.08.006.
119. **Fan, H., B. Ren and S. Li [2015]** “**An adhesive contact mechanics formulation based on atomistically induced surface traction,**” *Journal of Computational Physics*, **302**, **402-438**; DOI:10.1016/j.jcp.2015.08.035.
120. **Fan, H. and S. Li [2015]** “**A three-dimensional surface formulation for adhesive contact in finite deformation,**” *International Journal for Numerical Methods in Engineering*, **107**, **252-270**, DOI: **10.1002/nme.5169**.
121. Shi, C., Q. Tu, H. Fan, C. A. O. Rios and S. Li [2016], “Interphase models for nanoparticle-polymer composites,” *ASCE Journal of Nanomechanics and Micromechanics*, **6**, 04016003.

122. Peralta, N.R., K. M. Mosalam, and S. Li [2016], "Multiscale homogenization analysis for the effective elastic properties of masonry structures," *ASCE Journal of Materials in Civil Engineering*, 04016056.
123. **Li, S. and S. Urata [2016], "An atomistic-to-continuum molecular dynamics: Theory, algorithm, and applications,"** *Computer Methods in Applied Mechanics and Engineering*, **306**, 452-478.
124. **Bergel, G.L. and S. Li [2016], "The total and updated Lagrangian formulation of state-based peridynamics,"** *Computational Mechanics*, **58**, 351-370, DOI 10.1007/s00466-016-1297-8.
125. Shi, C., Tu, Q., Fan, H., and S. Li [2016], "An interphase model for effective elastic properties of concrete composites," *Journal of Micromechanics and Molecular Physics*, **1** No.1, 1650005, DOI: 10.1142
126. **Tu, Q., Q. Yang, H. Wang, and S. Li [2016], "Rotating carbon nanotube membrane filter for water desalination,"** *Scientific Reports*, **6**, 26183.
127. **Tong, Q. and S. Li [2016], "Multiscale coupling of molecular dynamics and peridynamics,"** *Journal of Mechanics and Physics of Solids*, **95**, 169-187.
128. Lyu, D. and H. Fan and S. Li [2016], "A hierarchical multiscale cohesive zone model and simulation of dynamic fracture in metals," *Engineering Fracture Mechanics*, **163**, 327-347.
129. Zhang Y., X.-Z. Zhang, S.-T. Tu, and S. Li [2016], "An Eshelbian homogenization solution for a coupled stress-diffusion moving interface problem in composites," *Journal of Micromechanics and Molecular Physics*, **1**, (3-4), No. 1640011 (doi: 10.1142/S2424913016400117).
130. Fan, H. and S. Li [2017], "Parallel Peridynamics-SPH simulation of soil fragmentation by using OpenMP," *Computational Particle Mechanics*, **4**, 199-211. DOI: 10.1007/s40571-016-0116-5.
131. **Urata, S. and S. Li [2017], "Higher order Cauchy-Born rule based multiscale cohesive zone model and prediction of fracture toughness of Silicon thin films,"** *International Journal of Fracture*, **203** (1), 159-181.
132. **Fan, H. and S. Li [2017], "A Peridynamics-SPH modeling and simulation of blast fragmentation of soil under buried explosive loads,"** *Computer Methods in Applied Mechanics and Engineering*, **318**, 349-381.
133. Zhang, Y., G.-R. Ma, X.-C. Zhang, S. Li, and S.-T. Tu [2017], "Thermal oxidation of Ti-6Al4 V alloy and pure titanium under external bending strain: Experiment and modelling," *Corrosion Science*, **122**, 61-73.
134. Urata, S. and Li, S. [2017], "A multiscale model for amorphous materials." *Computational Materials Science*, **135**, 64-77.
135. **Lyu, D. and Li, S. [2017], "Multiscale crystal defect dynamics: A coarse-grained lattice defect model based on crystal microstructure,"** *Journal of Mechanics and Physics of Solids*, **107**, 379-410.

136. Zheng, S., Tu, Q., Urban, J.J., Li, S. and Mi, B. [2017], "Swelling of graphene oxide membranes in aqueous solution: Characterization of interlayer spacing and insight into water transport mechanisms, *ACS Nano*, **11**(6), 64406450.
137. Tu, Q. and Li, S. [2017], "An updated Lagrangian particle hydrodynamics (ULPH) for Newtonian fluids," *Journal of Computational Physics*, **348**, 493-513.
138. Lai, X., Liu, L., Li, S., and Wang, Z. [2018], "A Non-ordinary state-based peridynamics modeling of fractures in quasi-brittle materials," *International Journal of Impact Engineering*, **111**, 130-146.
139. Li, T., Tu, Q. and Li, S. [2017], "Molecular dynamics modeling of nano-porous centrifuge for reverse osmosis desalination," *Desalination*, **451**, 182-191.
140. Zhang, L., Feng, X. and Li, S. [2017], "Review and perspective on soft matter modeling in cellular mechanobiology: cell contact, adhesion, mechanosensing, and motility," *Acta Mechanica*, **228**, 1-28. DOI10.1007/s00707-017-2057-3.
141. Wang, Z., Tu, Q., Zheng, S., Urban, J.J., Li, S. and Mi, B. [2017], "Understanding aqueous stability and filtration capability of MoS₂ membranes," *Nano Letters*, **17**, 7289-7298.
142. Mao, X., Sun, J., and Li, S. [2018], "Dynamics of delay-coupled FitzHugh-Nagumo neural rings," *Chaos*, **28**, 013104.
143. Tu, Q., Li, T., Deng, A., Zhu, K., Liu, Y. and Li, S. [2018], "A scale-up nanoporous membrane centrifuge for reverse osmosis desalination without fouling," *Technology*, **6**(01), 36-48.
144. Peng, Y. X., Zhang, A.M., Li, S. and Ming, F.R. [2018], "A beam formulation based on RKPM for the dynamics analysis of stiffened shell structures," *Computational Mechanics*, **63**(1), pp.35-48.
145. Urata, S. and Li, S. [2018], "A multiscale shear-transformation-zone (STZ) model and simulation of plasticity in amorphous solids," *Acta Materialia*, **155**, 153-165.
146. Lyu, D. and Li, S. [2018], "Recent developments in dislocation pattern dynamics: Current opinions and perspectives," *Journal of Micromechanics and Molecular Physics*, **3**, 184002
147. Lyu, D. and Li, S. [2019], "A multiscale dislocation pattern dynamics: Towards an atomistic-informed crystal plasticity theory," *Journal of the Mechanics and Physics of Solids*, **122**, 613-632.
148. Lyu, D., Ren, B., and Li, S. [2018], "Failure modes and mechanisms for rechargeable Lithium-based batteries: A state-of-the-art review," *Acta Mechanica*, **230**(3):701-27., DOI :10.1007/s00707-018-2327-8.

149. Ren, S., Chen, G., Li, T., Chen, Q., Li, S. [2018], "A deep learning-based computational algorithm for identifying damage load condition: An artificial intelligence inverse problem solution for failure analysis," *Computer Modeling in Science and Engineering (CMES)*, **117**(3):287-307.
150. Deng, L., Yan, W., and Li, S. [2019], "Computer modeling and weight limit analysis for bridge structure fatigue using OpenSEES," *ASCE Journal of Bridge Engineering*, **24**(8), 04019081.
151. **Chen, G., Li, T., Chen, Q., Ren, S., Wang, C. and Li, S. [2019], "Application of deep learning neural network to identify collision load conditions based on permanent plastic deformation of shell structures," *Computational Mechanics*, **64**, 435-449.**
152. **Yan, W., Deng, L., Zhang, F., Li, T. and Li, S. [2019], "Probabilistic machine learning approach to bridge fatigue analysis due to vehicular overloading," *Engineering Structure*, **193**, 91-99.**
153. **Yan, J., Li, S., Zhang, A., Kan, X., Sun, P. [2019], "Updated Lagrangian Particle Hydrodynamics(ULPH) modeling and simulation of multiphase flows," *Journal of Computational Physics*, **393**, 406-437.**
154. Song, Y., Yan, J., Li, S. and Kang, Z. [2019], "Peridynamic modeling and simulation of ice craters by impact," *Computer Modeling in Engineering & Sciences*, **121**(2), 465-492.
155. **Zhang, L.W., Xie, Y., Lyu, D. and Li, S. [2019]. "Multiscale modeling of dislocation patterns and simulation of nanoscale plasticity in Body-centered Cubic (BCC) single crystals," *Journal of the Mechanics and Physics of Solids*, **130**, 297-319.**
156. Hu, Y., Feng, G., Li, S., Sheng, W. and Zhang, C. [2019], "Numerical modelling of ductile fracture in steel plates with non-ordinary state-based peridynamics," *Engineering Fracture Mechanics*, **225**, No. 106446.
157. Sun, B., Li, S., Gu, Q., and Ou, J. [2019], "Coupling of peridynamic and numerical substructure method for modeling structures with local discontinuities," *Computer Modeling in Engineering & Science (CMES)*, **120**(3), 739-757.
158. Liu, R., Yan, J., and Li, S. [2019], "Modeling and simulation of ice/water interactions by coupling peridynamics with updated Lagrangian particle hydrodynamics," *Journal of Computational Particle Mechanics*, **7**(2), pp.241-255.
159. **Zhang, Z. Guo, X., Tang, H., Ding, J. Zheng, Y.-G., and Li, S. [2019], "Unidirectional self-driving liquid droplet transport on a monolayer graphene-covered textured substrate," *ACS Applied Materials & Interfaces*, **11**(31), 28562-28570.**
160. Murashima, T., Urata, S., and Li, S. [2019], "Coupling finite element method with Large Scale Atomic/Molecular Massively Parallel Simulator (LAMMPS) for hierarchical multiscale simulations," *The European Physical Journal B (EPJ B)*, **9**, 211-215.
161. Liu, J., Wang, Z., Li, S. and Li, S. [2019], "Development of trans-1, 4-polyisoprene (TPI) nanocomposite reinforced with nano-SiO₂ functionalized graphene oxide," *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, **580**, 123790.

162. Fan, J., Liu, R., Li, S., and Ge, X. [2020], "A micro-potential based Peridynamic method for deformation and fracturing in solids: two dimensional formulation," *Computer Methods in Applied Mechanics and Engineering*, **360**, No. 112751.
163. He, F., Wang, H., Wang, J., Li, S., Fan, Y., and Xu, X. [2020], "Experimental study of mini-hydrocyclones with different vortex finder depths using Particle Imaging Velocimetry," *Separation and Purification Technology*, **236**, No. 116296
164. Hu, Y., Ren, B., Ni, K., and Li, S. [2019], "Meshfree simulations of large scale ductile fracture of stiffened ship hull plates during ship stranding," *Meccanica*, **55**, 833-860, <https://doi.org/10.1007/s11012-019-01107-y>
165. Song, Y., Liu, R., Li, S., Kang, Z., and Zhang, F. [2019], "Peridynamics modeling and simulation of coupled thermomechanical removal of ice from frozen structures," *Meccanica*, **55**, pp. 961-976, <https://doi.org/10.1007/s11012-019-01106-z>
166. **Zheng, Q., Jiang, J., Yu, J., Li, X. and Li, S. [2020], "Aluminium induced interfacial strengthening in calcium silicate hydrates: structure, bonding and mechanical properties,"** *ACS Sustainable Chemistry & Engineering*, **8(7)**, 26222631.
167. Liu, J., Min, B., Wang, Z., Teng, J., Sun, X., Li, S. and Li, S. [2020], "Influence of functionalized core-shell structure on the thermodynamic and shape memory properties of nanocomposite," *Nanoscale*, **12**, 3205-3219.
168. **Zheng, Q., Jiang, J., Xu, G., Yu, J., Tang, L. and Li, S. [2020], "New insights into the role of Portlandite in the cement system: elastic anisotropy, thermal stability, and structural compatibility with CSH,"** *ACS Crystal Growth & Design*, **20(4)**, 24772488.
169. **Zheng, Q., Jiang, J., Chen, C., Yu, J., Li, X., Tang, L. and Li, S. [2020], "Nanoengineering microstructure of hybrid CSH/Silicene gel,"** *ACS Applied Materials & Interfaces*, **12(15)**, 1780617814.
170. **Tong, Q. and Li, S. [2020], "A concurrent multiscale study of dynamic fracture,"** *Computer Methods in Applied Mechanics and Engineering*, **366**, 113075.
171. Song, Y., Li, S., and Zhang, S. [2020], "Peridynamic modeling and simulation of thermo-mechanical de-icing process with modified ice failure criterion," *Defense Technology*, **17**, 15-35. <https://doi.org/10.1016/j.dt.2020.04.001>.
172. **Yu, H. and Li, S. [2020], "On energy release rates in peridynamics,"** *Journal of Mechanics and Physics of Solids*, **142**, No. 104024, <https://doi.org/10.1016/j.jmps.2020.104024>.
173. **Yan, J., Li, S., Kan, X., Zhang, A., and Lai, X. [2020], "Higher-order nonlocal theory of updated Lagrangian particle hydrodynamics (ULPH) and simulations of multiphase flows,"** *Computer Methods in Applied Mechanics and Engineering*, **368**, 113176.
174. Tu, Q., Ibrahimi, W., Ren, S., Wu, J., and Li, S. [2020], "A molecular dynamics study on rotational nanofluid and its application to desalination," *Membranes*, **10(6)**, 117.

175. **Zhang, Z., Li, S., Mi, B., Wang, J. and Ding, J., [2020].** “Surface slip on rotating graphene membrane enables the temporal selectivity that breaks the permeability-selectivity trade-off,” *Science Advances*, **6(34)**, 9471.
176. Su, M., Peng, H., and Li, S. [2020] “Application of interpretable artificial neural network to predict interface strength of near-surface-mounted CFRP on concrete joint,” *Journal of Zhejiang University Science A*, **22**, 427-440.
177. **Zhang, Q., Li, S., Zhang, A.M., Peng, Y. and Yan, J. [2020]** “A Peridynamic Reissner-Mindlin shell theory,” *International Journal for Numerical Methods in Engineering*, **122(1)**, 122-147.
178. Ma, L., Xu, H., Munkhbaatar, T. and Li, S. [2021] “An accurate frequency-based method for identifying cable tension while considering environmental temperature variation,” *Journal of Sound and Vibration*, **490**, 115693.
179. Shim, V.B., Holdsworth, S., Champagne, A.A., Coverdale, N.S., Cook, D.J., Lee, T., Wang, A.D., Li, S. and Fernandez, J.W. [2020], “Rapid prediction of brain injury pattern in mTBI by combining FE analysis with a machine-learning based approach,” *IEEE Access*, **8**, No. 179457.
180. **Su, M., Zhong, Q., Peng, H. and Li, S.[2020],** “Selected machine learning approaches for predicting the interfacial bond strength between FRPs and concrete,” *Construction and Building Materials*, **270**, 121456.
181. Xie, Y. and Li, S. [2021] “A stress-driven variational homogenization method based on the complementary potential energy principle for elastic composites,” *Computational Mechanics*, **67**, 637-652.
182. **Wang, C., Li, S., Zeng, D. and Zhu, X. [2021]** “Quantification and compensation of thermal distortion in additive manufacturing: A computational statistics approach,” *Computer Methods in Applied Mechanics and Engineering*, **375**, 113611.
183. **Chen, Q., Xie, Y., Ao, Y., Li, T., Chen, G., Ren, S., Wang, C. and Li, S. [2021]** “A deep neural network inverse solution to recover pre-crash impact data of car collisions,” *Transportation Research Part C*, **126**, No. 103009, <https://doi.org/10.1016/j.trc.2021.103009>.
184. Shi, C., Shi, Q., Tong, Qi., and Li, S. [2021] “Peridynamics modeling and simulation of mesoscale fracture in recycled coarse aggregate (RCA) concretes,” *Theoretical and Applied Fracture Mechanics*, **114**, No. 102949, <https://doi.org/10.1016/j.tafmec.2021.102949>.
185. Ma, L., Zhang, W., Cai, C.S., and Li, S., [2021] “The dynamic amplification factors for continuous beam bridges along high-speed railways,” *Advances in Structural Engineering*, **24**, 2542-2554.
186. **Su, M., Peng, H., Yuan, M. and Li, S., [2021]** “Identification of the interfacial cohesive law parameters of FRP strips externally bonded to concrete using machine learning techniques,” *Engineering Fracture Mechanics*, **247**, No. 107643.
187. **Yan, J., Li, S., Kan, X., Zhang, A., and Liu, L. [2021],** “Updated Lagrangian Particle Hydrodynamics (ULPH) modeling of solid object water entry problems,” *Computational Mechanics*, **67**, 1685-1703.

188. **Xie, Y. and Li, S. [2021], “Finite temperature atomistic-informed crystal plasticity finite element modeling (CPFEM) of single crystal Tantalum(a-Ta) at micron scale,”** *International Journal for Numerical Methods in Engineering*, **122**, 4660-4697.
189. Zhang, N., Gu, Q., Huang, S., Xue, X. and Li, S. [2021], “A practical bond-based peridynamic modeling of reinforced concrete structures,” *Engineering Structures*, **244**, 112748.
190. Chang, J., Li, S., Wang, W. and Niu, Q. [2021], “A study of non-coaxial effects on strain localization via micropolar plasticity model,” *Acta Geotechnica*, **17**, 721-739.
191. **Xie, Y. and Li, S. [2021], “Geometrically-compatible dislocation pattern dynamics and modeling of body-centered cubic(BCC) single crystal-plasticity at micron scale,”** *Computer Modeling in Engineering & Sciences*, **129**, 1419-1440.
192. **Zhang, Q., Li, S., Zhang, A.M., and Peng, Y. [2021] “On nonlocal geometrically exact shell theory and modeling fracture in shell structures,”** *Computer Methods in Applied Mechanics and Engineering*, **386**, No. 114074.
193. Kan, X., Yan, J., Li, S. and Zhang, A-M. [2021], “On differences and comparisons of peridynamic differential operators and nonlocal differential operators,” *Computational Mechanics*, **68**, 1349-1367.
194. Su, M., Peng, S., and Li, S. [2021], “A visualized bibliometric analysis of mapping research trends of machine learning in engineering (MLE),” *Expert Systems With Applications*, **186**, No. 115728.
195. **Yu, H. and Li, S. [2021] “On approximation theory of nonlocal differential operators,”** *International Journal for Numerical Methods in Engineering*, **122**, 6984-7012.
196. Ma, L., Wu, L., Cai, C.S., and Li, S. [2021] “A study on the theoretical impact factor spectrum for highway beam bridges,” *ASCE Journal of Bridge Engineering*, **26**(12), 04021089.
197. **Su, M., Xie, H., Kang, C. and Li, S. [2021] “Determination of the interfacial properties of longitudinal continuous slab track via a field test and ANN-based approaches,”** *Engineering Structures*, **246**, No.113039.
198. Gharehbaghi, V.R., Farsangi, E.N., Noori, M., Yang, T.Y., Li, S., Nguyen, A., Mlaga-Chuquitaype, C., Gardoni, P. Mirjalili, S. [2021], “A critical review on structural health monitoring: Definitions, methods, and perspectives,” **29**, 22092235. *Archives of Computational Methods in Engineering*, <https://doi.org/10.1007/s11831-021-09665-9>
199. Hu, X. and Li, S. [2021], “Molecular dynamics modeling and simulation of water desalination through a double-wall carbon nanotube with Moiré pattern,” *Journal of Micromechanics and Molecular Physics*, **7**(1), 39-47.
200. **Ao, Y., Li, Y., Gong, J. and Li, S. [2023], “An artificial intelligence-aided design (AIAD) of ship hull structures,”** *Journal of Ocean Engineering and Science*, **8**(1), 15-32.
201. Zheng, Q., Liang, C., Jiang, J., and Li, S. [2021] “Elastic properties and deformation mechanisms in the van der Waals single crystalline Indium Selenide,” *Physica status solidi (RRL) Rapid Research Letters*, **16**(3), 2100418.

202. Tian, Y., Kripalani, D.R., Xue, M., Li, S. and Zhou, K. [2022], “Highly stable electronic properties of rippled antimonene under compressive deformation,” *Physical Review B*, **105**(3), 035308.
203. Lai, X. and Li, S. [2022], “Substrate elasticity and surface tension mediate the spontaneous rotation of active chiral droplet on soft substrates,” *Journal of Mechanics and Physics of Solids*, **161**, 104788.
204. Xie, Y., Li, S., Hu, X., and Bishara, D. [2022], “An adhesive Gurtin-Murdoch surface hydrodynamics theory of moving contact line and modeling of droplet wettability on soft substrates,” *Journal of Computational Physics*, **456**, 111074.
205. Xie, Y., Li, S., Wu, C. T., Lyu, D., Wang, C., and Zeng, D. [2022], “A generalized Bayesian regularization network approach on characterization of geometric defects in lattice structures for topology optimization in preliminary design,” *Computational Mechanics*, **69**, 1119-1212, <https://doi.org/10.1007/s00466-021-02137-8>.
206. Song, Y., Li, S., and Li, Y. [2022], “Peridynamic modeling and simulation of thermo-mechanical fracture in inhomogeneous ice,” *Engineering with Computers*, **39**, 575-606.
207. Ao, Y., Li, Y., Gong, J., and Li, S. [2022], “Artificial intelligence design for ship structures: A variant multiple-input neural network based ship resistance prediction,” *ASME Journal of Mechanical Design*, **144**(9), No. 091707.
208. Li, J., Li, S., Lai, X., and Liu, L. [2022], “Peridynamic stress is the static first Piola-Kirchhoff Virial stress,” *International Journal of Solids and Structures*, **241**, 111478.
209. Liang, C., Zheng, Q., Jiang, J., Monteiro, P.J. and Li, S. [2022], “Calcium Silicate Hydrate colloid at different humidities: Microstructure, deformation mechanism, and mechanical properties,” *Acta Materialia*, **228**, p.117740.
210. Wang, X., Li, S. and Tong, Q. [2022], “Size-and-thickness-dependent fracture patterns of hollow core-shell electrodes during lithiation,” *Extreme Mechanics Letters*, **52**, No.101647.
211. Wang, L., Huang, S., Gu, Q., Sun, B., Li, S. and Lin, Z. [2022], “Simulation of highly nonlinear materials based on a stabilized non-ordinary state-based peridynamic model,” *Soil Dynamics and Earthquake Engineering*, **157**, No.107250.
212. Liu, W. K., Li, S., and Park, S. H. [2022], “Eighty years of the finite element method: Birth, evolution, and future,” *Archives of Computational Methods in Engineering*, **29**(6), 4431-4453.
213. Han, J., Li, S., Yu, H., Li, J., and Zhang, A. [2022], “On nonlocal cohesive continuum mechanics and cohesive peridynamic modeling (CPDM) of inelastic fracture,” *Journal of Mechanics and Physics of Solids*, **164**, Article 104906.

214. **Lai, X., Li, S., Yan, J., Liu, S., and Zhang, A. [2022], “Multiphase large-eddy simulations of human cough jet development and expiratory droplet dispersion,”** *Journal of Fluid Mechanics*, **942**, A12.
215. **Zhang, Q., Li, S., Zhang, A-M., Peng, Y., and Zhou, K. [2022], “Nonlocal nonlinear stiffened shell theory with stiffeners modeled as geometrically-exact beams,”** *Computer Methods in Applied Mechanics and Engineering*, **397**, 115150.
216. **Xie, Y., Wu, C.T., Li, B., Hu, X., and Li, S. [2022], “A feed-forwarded neural network-based variational Bayesian learning approach for crash reconstruction in structural forensic analysis of traffic accidents,”** *Computer Methods in Applied Mechanics and Engineering*, **397**, 115148.
217. **Urata, S., Hirobe, S., Oguni, K., and Li, S. [2022], “Atomistic to continuum simulations of fracture and damage evolutions in oxide glass and glass-ceramic materials: a critical review,”** *Journal of Non-Crystalline Solids: X*, **15**, No. 100102.
218. **Xia, B., Xiao, J. and Li, S. [2022], “Sustainability-based reliability design for reuse of concrete components,”** *Structure Safety*, **98**, No. 102241.
219. **Tabrizkhou, A., Kuczma, M., Lasecka-Plura, M., Farsangi, E.N., Noori, M. Paolo Gardoni, P., and Li, S. [2022], “Application and modelling of Shape-Memory Alloys for structural vibration control: State-of-the-art review,”** *Construction and Building Materials*, **342**, 127975.
220. **Shim, V., Tayebi, M., Kwon, E., Guild, S.J., Scadeng, M., Dubowitz, D., McBryde, F., Rosset, S., Wang, A., Fernandez, J. and Li, S. [2022], “Combining advanced magnetic resonance imaging (MRI) with finite element (FE) analysis for characterising subject-specific injury patterns in the brain after traumatic brain injury,”** *Engineering with Computers*, **38**(5), 3925-3937.
221. **Bishara, D., Xie, Y., Liu, W.K., and Li, S. [2022], “A state-of-the-art review on machine-learning based multiscale modeling, simulation, homogenization and design of materials,”** *Archives of Computational Methods in Engineering*, **30**(1), 191-222.
222. **Zhang, F., Zhang, Z., Liu, Z., Cheng, G., Li, S. and Ding, J., [2022], “On the temporal selectivity of desalination for a porous composite graphene-copper membrane (GCuM): A molecular dynamics study,”** *Desalination*, **546**, No. 116182.
223. **Song, Y., Zhang, L., Li, S., and Li, Y. [2022], “A multi-yield-surface plasticity state-based peridynamics model and its applications to simulations of ice-ship interactions,”** *Journal of Marine Science and Application*, **22**(3), 395-410.
224. **Xie, Y., Li, S., Wu, C.T., Lai, Z. and Su, M., 2024. A novel hypergraph convolution network for wafer defect patterns identification based on an unbalanced dataset.** *Journal of Intelligent Manufacturing*, **35**(2), 633-646.
225. **Fan, J., Xie, H., Li, S., Zhang, H., and Zhang, Y. [2023], “New insights into the bond-based and ordinary state-based peridynamic models,”** *Engineering Fracture Mechanics*, **277**, 108991.

226. Xie, Y., Li, B., Chao, W., Zhou, K., Wu, C.T., and Li, S. [2023], “A Bayesian regularization network approach to thermal distortion control in 3D printing,” *Computational Mechanics*, **72**, 137-154.
227. Zhang, Q., Nguyen-Thanh, N., Li, W., Zhang, A.-M., Li, S., and Zhou, K. [2023], “A coupling approach of Isogeometric-Peridynamics for static and dynamic crack propagation,” *Computer Methods in Applied Mechanics and Engineering*, **410**, No. 115904.
228. He, Z., Zhang, L., Li, S., Ge, Y., and Yan, Y. [2023], “Uncertainty quantification for mechanical properties of bi-modulus graphite based on the Maximum Entropy Principle,” *ASME Journal of Applied Mechanics*, **90**(6), No. 061002.
229. Bishara, D. and Li, S. [2023], “A machine-learning aided multiscale homogenization model for crystal plasticity: application for face-centered cubic single crystals,” *Computational Mechanics*, **72**, 77-93.
230. Ge, Y., He, Z., Li, S., Zhang, L., and Li, S. [2003] “A machine learning-based probabilistic computational framework for uncertainty quantification of actuation of clustered tensegrity structures,” *Computational Mechanics*, **72**(3), 431-450.
231. Bishara, D. and Li, S. [2023], “A multiscale two-dimensional finite element incorporating the second-order CauchyBorn rule for cohesive zone modeling: Simulation of fracture in polycrystalline materials,” *Engineering Fracture Mechanics*, **280**, No. 109117
232. Liu, R., Xue, Y., and Li, S. [2023], “A general finite deformation hypo-elastoplasticity peridynamics model and its applications,” *Engineering with Computers*, **40**, 1-20..
233. Ma, L., Cai, C.S., Wu, L.H., and Li, S. [2023], “Study on the dynamic characteristics of the suspender-damper system and a frequency-based multiple parameter identification method for the system,” *Journal of Sound and Vibration*, **553**, No. 117660.
234. Liu, R., Xue, Y., and Li, S. [2023], “A three-dimensional (3D) micro-potential-based peridynamics model for deformation and fracture in solid materials,” *Engineering Fracture Mechanics*, **282**, 109180.
235. Ao, Yu, Li, Y., Li, S., and Gong, J. [2023], “Construction high precision neural network proxy model for ship hull structure design based on hybrid datasets of hydrodynamic load,” *Journal of Marine Science and Application*, **23**, 49-63,, <https://doi.org/10.1007/s11804-024-00388-4>.
236. Ao, Y., Xu, J., Zhang, D. and Li, S., [2024], “Artificial Intelligence aided design (AIAD) of hull form of unmanned underwater vehicles (UUVs) for minimization of energy consumption,” *ASME Journal of Computing and Information Science in Engineering*, **24**(1), No. 011003.
237. Han, J., Li, S. and Zhang, A.M., [2023], “Applications of bond-based cohesive peridynamics method (CPDM) to simulate inelastic fracture of stiffened plates in ship hull structures,” *Computers & Structures*, **286**, No.107108.
238. Nguyen-Thanh, N., Zhang, Q., Li, W., Wu, M.S., Li, S. and Zhou, K., [2023], “Higher-order nonlocal operator theory for phase-field modeling of ductile fracture in elasto-plastic materials,” *Computer Methods in Applied Mechanics and Engineering*, **414**, No.116054.

239. **Tamur, C. and Li, S., [2023], “A bond-based peridynamics modeling of polymeric material fracture under finite deformation,”** *Computer Methods in Applied Mechanics and Engineering*, **414**, No.116132.
240. **Hu, X. and Li, S., [2023], “On Peierls-Rice-Beltz nonlocal continuum model and simulations of mesoscale dislocations (slips) and shear cracks,”** *Journal of the Mechanics and Physics of Solids*, **176**, No.105309.
241. Ebrahimi, M., Nobahar, E., Mohammadi, R.K., Farsangi, E.N., Noori, M. and Li, S., [2023], “The influence of model and measurement uncertainties on damage detection of experimental structures through recursive algorithms,” *Reliability Engineering & System Safety*, **239**, No.109531.
242. Gu, Q., Lin, Z., Wang, L., Qiu, Z., Huang, S. and Li, S., [2023], “A novel peridynamic solution for modelling saturated soil-pore fluid interaction in liquefaction analysis,” *Computers and Geotechnics*, **162**, p.105686.
243. **Zheng, Q., Liang, C., Jiang, J. and Li, S., [2023], “Carbonation dynamics of hydrated alite revealed by electron microscopy,”** *Chemical Engineering Journal*, **469**, p.143720.
244. Ma, L., Cai, C.S., Zhou, G. and Li, S., [2023], “A numerical method for solving evolutionary statistical characteristics of dynamic responses of the vehiclebridge coupled system based on the recursion principle. *ASCE Journal of Engineering Mechanics*, **149**(10), p.04023083.
245. **Zheng, Q., Liang, C., Jiang, J., Li, X. and Li, S. [2023], “Alite hydration at the single grain level,”** *Cement and Concrete Composites*, **144**, pages 105297.
246. Yan, J., Li, S., Kan, X., Lv, P., Zhang, A.M and Duan, H., [2023], “Updated Lagrangian particle hydrodynamics (ULPH) modeling for free-surface fluid flows,” *Computational Mechanics*, **73**(2), 297-316.
247. Xue, B., Zhang, A.M., Peng, Y.X., Zhang, Q. and Li, S., [2023], “A meshfree orthotropic laminated shell model for geometrically nonlinear static and dynamic analysis,” *Computational Mechanics*, **73**, 1033-1051.
248. Tamur, C., Li, S., and Zeng, D. [2023], “Artificial neural networks for predicting mechanical properties of crystalline polyamide12 via molecular dynamics simulations,” *Polymers*, **15**(21), 4254.
249. Zhang, Z., Yu, A., Li, S. and Gu, G. [2023], “An adaptive machine learning-based optimization method in the aerodynamic analysis of a finite wing under various cruise conditions,” *Theoretical and Applied Mechanics Letters*, **14**(1), No. 100489.
250. **Zheng, Q., Liang, C., Jiang, J., Mao, H., Bustillo, K.C. Song, C., Reimer, J. A., Monteiro, PJM, Zheng, H., and Li, S. [2024], “Atomic-scale identification of defects in alite,”** *Cement and Concrete Research*, **176**, No. 107391.
251. Wang, R., Li, S., Liu, Y., Hu, X., Lai, X. and Beer, M. [024]. “Peridynamics-based large-deformation simulations for near-fault landslides considering soil uncertainty,” *Computers and Geotechnics*, **168**, No. 106128.

252. Han, J., Li, S., Liu, W.T. and Yan, J. [2024], "Simulation of underwater shaped charge jet formation and penetration of metal plates by coupling Riemann-updated Lagrangian particle hydrodynamics and cohesive peridynamics," *Ocean Engineering*, **295**, p.116811.
253. Xiong, J.R., Ren, F.M., Li, S.F., Tian, S.Y., Li, Y.S., and Mo, J.X. [2024], "A study on low-frequency vibration mitigation by using the metamaterial-tailored composite concrete-filled steel tube column," *Engineering Structures*, **305**, 117673.
254. Ren, F.M., Xiong, J.R., Li, S.F., Tian, S.Y., Li, Y.S., Lai, C.L. and Mo, J.X. [2024], "Low-frequency bandgap and vibration mitigation performance of metamaterial-tailored concrete-filled steel tube columns," *Thin-Walled Structures*, **198**, No. 111714.
255. Ao, Y., Duan, H. and Li, S. [2024], "An integrated-hull structure design assisted by artificial intelligence-aided design method," *Computers & Structures*, **297**, 107520.
256. Ao, Y., Li, S., Li, Y., and Gong, J. [2024], "The construction of a neural network proxy model for ship hull design based on multi-fidelity datasets and the parameter freezing strategy," *Journal of Marine Engineering & Technology*, Online, DOI link: <https://doi.org/10.1080/20464177.2024.2330174>.
257. Bishara, D. and Li, S. [2024], "A material energy-momentum flux-driven phase field fracture mechanics model," *Computer Methods in Applied Mechanics and Engineering*, **425**, No. 116920, <https://doi.org/10.1016/j.cma.2024.116920>.
258. Ma, P.S., Liu, X.C., Luo, X.L., Li, S. and Zhang, L.W., [2024], "Asymptotic homogenization of phase-field fracture model: An efficient multiscale finite element framework for anisotropic fracture," *International Journal for Numerical Methods in Engineering*, Online, <https://doi.org/10.1002/nme.7489>, p.e7489.
259. Zheng, Q., Liang, C., Jiang, J., and Li, S. [2024] "Understanding anti-corrosion mechanisms of the 2,6-dithiopurine (DTP) inhibitor molecules on iron surfaces," *Journal of Environmental Chemical Engineering*, **12**, 13176.
260. He, Z., Ge, Y., Li, S., and Zhang, L. [2024] "Numerical modeling of wrinkling modulation in tensegrity-membrane structures," Accepted for publication in *International Journal of Solids and Structures*.
261. Lai, X., Wang, Z., Xiong, J., Li, S., Liu, X. and Liu, L. [2024] "An updated Lagrangian particle hydrodynamics (ULPH)-NOSBPD coupling approach for modeling fluid-structure interaction problem," Accepted for publication in *Computer Modeling in Engineering and Sciences*.
262. Li, W., Nguyen-Thanh, N., Zhang, Q., Du, H., Li, S. and Zhou, K. [2024] "A multigrid coupling approach of the extended isogeometric meshfree method and peridynamics for brittle fracture," *Computational Mechanics*, **73(2)**, 427-447.
263. Kan, X., Yan, J., Li, S., Wang, J., Wang, Y. and Chen, Y. [2024] "Updated Lagrangian particle hydrodynamics (ULPH) simulations of underwater bubble motions in three-dimensional space," Accepted for publication in *Engineering with Computers*, pp.1-21.
264. Zhang, Q., Liu, Y., Nguyen-Thanh, N., Li, W., Li, S. and Zhou, K. [2024]. "Adaptive topology optimization for enhancing resistance to brittle fracture using the phase field model," *Computer Methods in Applied Mechanics and Engineering*, **431**, p.117237.

265. Song, X., Yi, B., Chen, Q., Zhou, Y., Cho, H., Hong, Y., Chung, S., You, L., Li, S., and Hong, J. [2024], “Machine learning-powered ultrahigh controllable and wearable magnetoelectric piezotronic touching device,” *ACS NANO*, **28**, No. 16648.
266. Khodabandeh, P., Azarhomayun, F., Shekarchi, M. and Li, S. [2024]. “Experimental investigation of using Ultra-High-Performance Concrete coating for anti-corrosion protection of reinforced concrete induced by chloride ions,” *Journal of Building Engineering*, **97**, p.110743.
267. Shi, C., Zhang, S., Zhang, X. and Li, S. [2024], “Peridynamics simulations of the damage of reinforced concrete structures under radial blasting,” Accepted for publication in *International Journal of Damage Mechanics*, pp. 1-17.
268. Wang, C. and Li, S., [2024], “A variational Bayesian inference theory of elasticity and its mixed probabilistic finite element method for inverse deformation solutions in any dimension,” arXiv preprint arXiv:2410.07605.
269. Hu, X., Chen, Q., Luo, N. H., Zheng, R. J., and Li, Shaofan Li, [2024] “A message passing neural network surrogate model for bond-associated peridynamic material correspondence formulation,” arXiv preprint arXiv:2411.08911.
270. Pour, A. K., Farsangi, E. N., Yang, T.Y., Li, S., Hajirasouli, S., and Shirkhani, A. [2024] “ A critical review on 3D-printing of conventional and geopolymer concretes: Advancements, challenges, future directions, and cost analysis,” Accepted for publication in ASCE *Journal of Structural Design and Construction Practice*.
271. Hu, X. and Li, S. [2024] “On nonlocal-deformation-field-driven bond-based Peridynamics and its inherent nonlocal continuum mechanics,” Accepted for publication in *Computer Methods in Applied Mechanics and Engineering*.
272. Xiong, J., Wang, Z., Li, S., Lai, X., Liu, L. and Liu, X. [2024], “An updated Lagrangian particle hydrodynamics (ULPH) implementation of heat conduction model for weakly-compressive fluid,” *Computational Particle Mechanics*, pp.1-13.
273. Ao, Y., Duan, H. and Li, S. [2024], ”Artificial intelligence-aided design for unmanned underwater vehicles: A multiple activation function network based hull resistance prediction,” Accepted for publication in *IEEE Journal of Oceanic Engineering* .
274. Yan, W., Ren, H., and Li, S. [2024], “Innovative bridge weigh-in-motion technology based on the hybrid-data-driven artificial neural network,” Accepted for publication in *Computer-Aided Civil and Infrastructure Engineering* .

Monographs and Book Chapters

1. S. Li and W.-K. Liu, [2004] *Meshfree Particle Methods*, Springer-Verlag . ISBN: 978-3-540-22256-9;
2. S. Li and G. Wang, [20018] *Introduction to Micromechanics and Nanomechanics, Second Edition*, World Scientific Pub. ISBN 978-981-281-413-5;
3. W.-K. Liu, H. C. Park, D. Qian, E.G. Karpov, H. Kadowaki, G.J. Wagner and S. Li, [2005] ”Bridging Scale Mechanics and Materials,” in *Finite Element Methods: 1970s and Beyond*, CIMNE, ISBN: 84-95999-49-8, 2005, 72-88.

4. X. Zeng and S. Li [2010] “Recent Developments in Con-current Multiscale Simulations” In *Advances in Computational Mechanics* (Chapter 1), Edited by Q. Qin and B. Sun, Nova Science Publishers, Inc. New York, ISBN 978-1-60876-901-8.
5. S. Li and B. Sun (Editor) [2011], *Advances in Cell Mechanics*, HEP-Springer, ISBN 978-3-642-17589-3.
6. S. Li and B. Sun (Editor) [2011], *Advances in Soft Matter Mechanics*, HEP-Springer, ISBN 978-3-642-19372-9.
7. S. Li and D. Qian (Editor) [2013], *Multiscale Simulations and Mechanics of Biological Materials* (Hardcover), John Wiley & Sons Inc. ISBN 9781118350799.
8. S. Li and X.-L. Gao (Editors) [2013], *Handbook of Micromechanics and Nanomechanics* (Hardcover), Pan Stanford Publishing (2013), ISBN-10: 981441123X — ISBN-13: 978-9814411233
9. **S. Li and J. Li [2022], *Introduction to Computational Nanomechanics*, Cambridge University Press.**
10. S. Li (Editor) [2023], “Computational and Experimental Simulations in Engineering Proceedings of ICCES 2023”, Volume 1,2, and 3. Springer.
11. Farsangi, E.N., Noori, M., Yang, T.T., Loureno, P.B., Gardoni, P., Takewaki, I., Chatzi, E. and Li, S. (Editors)., [2023]. “Automation in Construction Toward Resilience: Robotics, Smart Materials and Intelligent Systems,” CRC Press.

Teaching

- Computational Statistical Nano-mechanics (Graduate Course, CE237);
- Micro-mechanics and Nano-mechanics (Graduate Course, CE236);
- Elasticity Theory (Graduate Course, CE231);
- Nonlinear Continuum Mechanics (Graduate Course, CE232);
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- Mechanics of Materials (Undergraduate Course, CE130);
- Introduction to Solid Mechanics (Engineering Mechanics) (Undergraduate Course, ME85/C30);
- Statics (Undergraduate Course, E36);
- Mechanics, Structure and Computer (Undergraduate Course, CE130N);
- Risk and Reliability Analysis in Engineering, (CE193).
- Introduction to Computer Programming for Scientists and Engineers (E7) .
- The Structure and Properties of Civil Engineering Materials (CE60) .