

# Shaofan Li, Ph.D.

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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

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

## Honors and Awards

- 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];
- Member of the Research Impact Fund Committee of the Research Grants Council (RGC) of Hong Kong (2018-);

## 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 with 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 with 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.

## 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 30th January 2024, based on *Google Scholar*, the total citation numbers on referred publications (monographs and peer-reviewed journal papers) are more than 17400 times with an h-index 58.

<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 MoS<sub>2</sub> 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-SiO<sub>2</sub> 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,”** Accepted for publication in *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,” **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 vehicle-bridge 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*, pp.1-19. First Online.
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. [2024]. “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.

## 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, [2008] *Introduction to Micromechanics and Nanomechanics*, 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 (editor) [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

## Teaching

- Computational Statistical Nano-mechanics (Graduate Course, C237);
- Micro-mechanics and Nano-mechanics ( Graduate Course, CE236);
- Elasticity Theory (Graduate Course, CE231);
- Continuum Mechanics and Structure Mechanics (Graduate Course, CE232);
- Advanced Mechanics of Materials ( Undergraduate Course, CE131);
- 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) .