

Ju Li

Employment *Massachusetts Institute of Technology* Cambridge, MA 02139
Battelle Energy Alliance Professor of Nuclear Science and Engineering,
Full Professor (7/2011-present), Department of Nuclear Science and Engineering
and Department of Materials Science and Engineering

University of Pennsylvania Philadelphia, PA 19104
Associate Professor of Materials Science and Engineering (9/2007-6/2011)

Ohio State University Columbus, OH 43210
Assistant Professor of Materials Science and Engineering (9/2002-9/2007)

Massachusetts Institute of Technology Cambridge, MA 02139
Research scientist (4/2002-9/2002), postdoctoral associate (9/2000-4/2002)
Departments of Nuclear Engineering and Materials Science and Engineering

Education *Massachusetts Institute of Technology* Cambridge, MA 02139
Department of Nuclear Engineering (1994-2000) Ph.D., Sept. 2000

University of Science and Technology of China Hefei, Anhui 230026, P.R.C.
Special Class for Gifted Young (1990-1994) B.S. in Physics, 1994

Honors & Awards Fellow of the Materials Research Society (2017)

Fellow of the American Physical Society (2014)

Thomson Reuters *Highly Cited Researchers* 2014, among 147 scientists world-wide in *Materials Science* category based on papers published between 2002-2012, and among “*The World’s Most Influential Scientific Minds 2014*”

Lee Hsun Young Scientist Lecture Series on Materials Science, Institute of Metal Research, Chinese Academy of Sciences (2011)

Chinese Ministry of Education and Li Ka Shing Foundation Chang Jiang Scholar Award (2009)

TMS Robert Lansing Hardy Award (2009)

Technology Review TR35 award (2007)

National Academy of Engineering U.S. Frontiers of Engineering Symposium (Microsoft Research, Sept. 2007) and German-American Frontiers of Engineering Symposium (Oak Ridge, April 2010) co-sponsored by the Alexander von Humboldt Foundation.

Materials Research Society (MRS) 2006 Outstanding Young Investigator Award

Ohio State University College of Engineering Lumley Research Award 2006
Presidential Early Career Award for Scientists and Engineers (PECASE) 2005
Materials Research Society (MRS) Graduate Student Silver Medalist 1998
MIT Nuclear Engineering Department Manson Benedict Fellowship 1996-1997

Service

Author of free molecular visualization software *AtomEye*:
<http://www.google.com/search?q=AtomEye>

Member of Editorial Board of *Nano Research* (Mar. 2008-), *Modelling and Simulation in Materials Science and Engineering* (Feb. 2008-), *Science China: Technological Sciences* (Jan. 2013-), *Extreme Mechanics Letters* (Aug. 2014-).

3-Member Executive Board (Oct. 2010-present) and International Advisory Board (Aug. 2009-present) of Multiscale Materials Modeling (MMM) conference series.

Lead Organizer of 2013 MRS Fall Meeting Symposium YY “*Elastic Strain Engineering for Unprecedented Materials Properties*”, and Lead Guest Editor of *MRS Bulletin* February 2014 special issue on Elastic Strain Engineering

Author of multiple perspective articles in *MRS Bulletin*

Issued Patents

2. Mar 14, 2017, US Patent 9595624 “**Strain-engineered bandgaps**,” Ju Li, Xiaofeng Qian, Ji Feng.
1. Nov.1, 2016: US Patent 9484489 “**Engineered band gaps**”, Ju Li, Xiaofeng Qian, Menghao Wu.

Representative Publications (310+ peer-reviewed papers, 19,000+ SCI cites, h-index 72)¹

127. Y. Yang, A. Kushima, W-Z. Han, H-L. Xin and J. Li, “**Liquid-Like, Self-Healing Aluminum Oxide during Deformation at Room Temperature**,” *Nano Letters* **18** (2018) 2492-2497.
126. Y-G. Yao, Z-N. Huang, P-F. Xie, S.D. Lacey, R.J. Jacob, H. Xie, F-J. Chen, A-M. Nie, T-C. Pu, M. Rehwoldt, D-W. Yu, M.R. Zachariah, C. Wang, R. Shahbazian-Yassar, J. Li and L-B. Hu, “**Carbothermal shock synthesis of high-entropy-alloy nanoparticles**,” *Science* **359** (2018) 1489-1494.

¹ ResearcherID: A-2993-2008 ISI Web of Knowledge search keywords: “Li J” in Author and “nucl same engn same 02139 or mat same 43210 or mat same Univ Penn or 2041 same Columbus” in Address. See also all publications ranked by Google Scholar.

125. K.P. So, A. Kushima, J.G. Park, X-H. Liu, D.H. Keum, H.Y. Jeong, F. Yao, S.H. Joo, H.S. Kim, H. Kim, J. Li and Y.H. Lee, "Intragranular Dispersion of Carbon Nanotubes Comprehensively Improves Aluminum Alloys," *Advanced Science* (2018) 1800115.
124. Q-J. Li, B. Xu, S. Hara, J. Li and E. Ma, "Sample-size-dependent surface dislocation nucleation in nanoscale crystals," *Acta Materialia* **145** (2018) 19-29.
123. L-M. Suo, W-J. Xue, M. Gobet, S.G. Greenbaum, C. Wang, Y-M. Chen, W-L. Yang, Y-X. Li and J. Li, "Fluorine-donating electrolytes enable highly reversible 5V-class Li metal batteries," *PNAS* **115** (2018) 1156-1161.
122. Y. Yang, Y.G. Li, M.P. Short, C-S. Kim, K.K. Berggren and J. Li, "Nano-beam and nano-target effects in ion radiation," *Nanoscale* **10** (2018) 1598-1606.
121. G-Y. Xu, A. Kushima, J-R. Yuan, H. Dou, W-J. Xue, X-G. Zhang, X-H. Yan and J. Li, "Ad hoc Solid Electrolyte on Acidized Carbon Nanotube Paper Improves Cycle Life of Lithium-Sulfur Batteries," *Energy & Environmental Science* **10** (2017) 2544-2551.
120. L-M. Suo, D. Oh, Y-X. Lin, Z-Q. Zhuo, O. Borodin, T. Gao, F. Wang, A. Kushima, Z-Q. Wang, H-C. Kim, Y. Qi, W-L. Yang, F. Pan, J. Li, K. Xu and C-S. Wang, "How Solid-Electrolyte Interphase Forms in Aqueous Electrolytes," *J. Am. Chem. Soc.* **10** (2017) 18670-18680.
119. W-J. Xue, L-X. Miao, L. Qie, C. Wang, S. Li, J-L. Wang and J. Li, "Gravimetric and volumetric energy densities of lithium-sulfur batteries," *Current Opinion in Electrochemistry* **6** (2017) 92-99.
118. S-T. Wang, W. Quan, Z. Zhu, Y. Yang, Q. Liu, Y. Ren, X-Y. Zhang, R. Xu, Y. Hong, Z-T. Zhang, K. Amine, Z-L. Tang, J. Lu and J. Li, "Lithium titanate hydrates with superfast and stable cycling in lithium ion batteries," *Nature Communications* **8** (2017) 627.
117. Y-M. Chen, X-Y. Li, K-S. Park, W. Lu, C. Wang, W-J. Xue, F. Yang, J. Zhou, L-M. Suo, T-Q. Lin, H-T. Huang, J. Li and J.B. Goodenough, "Nitrogen-Doped Carbon for Sodium-Ion Battery Anode by Self-Etching and Graphitization of Bimetallic MOF-Based Composite," *Chem* **3** (2017) 152-163.
116. S-L. Zhang, K-J. Zhao, T. Zhu and J. Li, "Electrochemomechanical degradation of high-capacity battery electrode materials," *Progress in Materials Science* **89** (2017) 479-521.
115. Y-H. Zheng, Y-S. Wang, Y-X. Lu, Y-S. Hu and J. Li, "A high-performance sodium-ion battery enhanced by macadamia shell derived hard carbon anode," *Nano Energy* **39** (2017) 489-498.
114. G-Y. Xu, Q-B. Yan, S-T. Wang, A. Kushima, P. Bai, K. Liu, X-G. Zhang, Z-L. Tang and J. Li, "A thin multifunctional coating on a separator improves the cyclability and safety of lithium sulfur batteries," *Chemical Science* **8** (2017) 6619-6625.

113. W-J. Xue, Q-B. Yan, G-Y. Xu, L-M. Suo, Y-M. Chen, C. Wang, C-A. Wang and J. Li, "Double-oxide sulfur host for advanced lithium-sulfur batteries," *Nano Energy* **38** (2017) 12-18.
112. M-J. Lee, E-S. Lho, P. Bai, S-J. Chae, J. Li and J-P. Cho, "Low-Temperature Carbon Coating of Nanosized $\text{Li}_{1.015}\text{Al}_{0.06}\text{Mn}_{1.925}\text{O}_4$ and High-Density Electrode for High-Power Li-Ion Batteries," *Nano Letters* **17** (2017) 3744-3751.
111. W-Z. Han, J. Zhang, M-S. Ding, L. Lv, W-H. Wang, G-H. Wu, Z-W. Shan and J. Li, "Helium Nanobubbles Enhance Superelasticity and Retard Shear Localization in Small-Volume Shape Memory Alloy," *Nano Letters* **17** (2017) 3725-3730.
110. B.Y. Guan, A. Kushima, L. Yu, S. Li, J. Li and X.W. Lou, "Coordination Polymers Derived General Synthesis of Multishelled Mixed Metal-Oxide Particles for Hybrid Supercapacitors," *Advanced Materials* **29** (2017) 1605902.
109. W-B. Li, L. Sun, J-S. Qi, P. Jarillo-Herrero, M. Dinca and J. Li, "High temperature ferromagnetism in pi-conjugated two-dimensional metalorganic frameworks," *Chemical Science* **8** (2017) 2859-2867.
108. K. Liu, P. Bai, M.Z. Bazant, C-A. Wang and J. Li, "A soft non-porous separator and its effectiveness in stabilizing Li metal anodes cycling at 10 mA cm^{-2} observed in situ in a capillary cell," *Journal of Materials Chemistry A* **5** (2017) 4300-4307.
107. M. Li, D-G. Xie, E. Ma, J. Li, X-X. Zhang and Z-W. Shan, "Effect of hydrogen on the integrity of aluminium-oxide interface at elevated temperatures," *Nature Communications* **8** (2017) 14564.
106. Y. Jin, S. Li, A. Kushima, X-Q. Zheng, Y-M. Sun, J. Xie, J. Sun, W-J. Xue, G-M. Zhou, J. Wu, F-F. Shi, R-F. Zhang, Z. Zhu, K-P. So, Y. Cui and J. Li, "Self-healing SEI enables full-cell cycling of a silicon-majority anode with a coulombic efficiency exceeding 99.9%," *Energy & Environmental Science* **10** (2017) 580-592.
105. A. Kushima, K.P. So, C. Su, P. Bai, N. Kuriyama, T. Maebashi, Y. Fujiwara, M.Z. Bazant and J. Li, "Liquid cell transmission electron microscopy observation of lithium metal growth and dissolution: Root growth, dead lithium and lithium flotsams," *Nano Energy* **32** (2017) 271-279.
104. S-T. Wang, Y. Yang, W. Quan, Y. Hong, Z-T. Zhang, Z-L. Tang and J. Li, "Ti³⁺-free three-phase $\text{Li}_4\text{Ti}_5\text{O}_{12}/\text{TiO}_2$ for high-rate lithium ion batteries: Capacity and conductivity enhancement by phase boundaries," *Nano Energy* **32** (2017) 294-301.
103. Y.G. Li, Y. Yang, M.P. Short, Z.J. Ding, Z. Zeng and J. Li, "Ion radiation albedo effect: influence of surface roughness on ion implantation and sputtering of materials," *Nuclear Fusion* **57** (2017) 016038.
102. L. Yang, T. Dai, Y-C. Wang, D-G. Xie, R.L. Narayan, J. Li and X-H. Ning, "Chestnut-like SnO_2/C nanocomposites with enhanced lithium ion storage properties," *Nano Energy* **30** (2016) 885-891.

101. S-Z. Li, Q-Y. Li, R.W. Carpick, P. Gumbsch, X.Z. Liu, X-D. Ding, J. Sun and J. Li, "The evolving quality of frictional contact with graphene," *Nature* **539** (2016) 541-545.
100. D-G. Xie, S-Z. Li, M. Li, Z-J. Wang, P. Gumbsch, J. Sun, E. Ma, J. Li and Z-W. Shan, "Hydrogenated vacancies lock dislocations in aluminium," *Nature Communications* **7** (2016) 13341.
99. K.P. So, X-H. Liu, H. Mori, A. Kushima, J.G. Park, H.S. Kim, S. Ogata, Y.H. Lee and J. Li, "Ton-scale metal-carbon nanotube composite: The mechanism of strengthening while retaining tensile ductility," *Extreme Mechanics Letters* **8** (2016) 245-250.
98. X-H. Liu, J-F. Gu, Y. Shen and J. Li, "Crystal metamorphosis at stress extremes: how soft phonons turn into lattice defects," *NPG Asia Materials* **8** (2016) e320.
97. J-Y. Zhang, Y-W. Mao, D. Wang, J. Li and Y-Z. Wang, "Accelerating ferroic ageing dynamics upon cooling," *NPG Asia Materials* **8** (2016) e319.
96. Q-J. Li, J. Li, Z-W. Shan and E. Ma, "Surface Rebound of Relativistic Dislocations Directly and Efficiently Initiates Deformation Twinning," *Phys. Rev. Lett.* **117** (2016) 165501.
95. Q-J. Li, J. Li, Z-W. Shan and E. Ma, "Strongly correlated breeding of high-speed dislocations," *Acta Materialia* **119** (2016) 229-241.
94. Z-Q. Liu, Z-Y. Yin, C. Cox, M. Bosman, X-F. Qian, N. Li, H-Y. Zhao, Y-P. Du, J. Li and D.G. Nocera, "Room temperature stable CO_x-free H₂ production from methanol with magnesium oxide nanophotocatalysts," *Science Advances* **2** (2016) e1501425.
93. H-T. Zhang, J. Tersoff, S. Xu, H-X. Chen, Q-B. Zhang, K-L. Zhang, Y. Yang, C-S. Lee, K-N. Tu, J. Li and Y. Lu, "Approaching the ideal elastic strain limit in silicon nanowires," *Science Advances* **2** (2016) e1501382.
92. Z. Zhu, A. Kushima, Z-Y. Yin, L. Qi, K. Amine, J. Lu and J. Li, "Anion-redox nanolithia cathodes for Li-ion batteries," *Nature Energy* **1** (2016) 16111.
91. H. Wang, G-Y. Gou and J. Li, "Ruddlesden-Popper perovskite sulfides A₃B₂S₇: A new family of ferroelectric photovoltaic materials for the visible spectrum," *Nano Energy* **22** (2016) 507-513.
90. K.P. So, D. Chen, A. Kushima, M-D. Li, S-T. Kim, Y. Yang, Z-Q. Wang, J.G. Park, Y.H. Lee, R.I. Gonzalez, M. Kiwi, E.M. Bringa, L. Shao and J. Li, "Dispersion of carbon nanotubes in aluminum improves radiation resistance," *Nano Energy* **22** (2016) 319-327.
89. W-B. Li and J. Li, "Ferroelasticity and domain physics in two-dimensional transition metal dichalcogenide monolayers," *Nature Communications* **7** (2016) 10843.
88. X. Ge, C-D. Gu, Z-Y. Yin, X-L. Wang, J-P. Tu and J. Li, "Periodic stacking of 2D charged sheets: Self-assembled superlattice of NiAl layered double hydroxide (LDH) and reduced graphene oxide," *Nano Energy* **20** (2016) 185-193.

87. S-T. Kim, S.J. Choi, K-J. Zhao, H. Yang, G. Gobbi, S-L. Zhang and J. Li, "Electrochemically driven mechanical energy harvesting," *Nature Communications* **7** (2016) 10146.
86. N-Q. Zhang, Z-L. Zhu, H. Xu, X-P. Mao and J. Li, "Oxidation of ferritic and ferritic-martensitic steels in flowing and static supercritical water," *Corrosion Science* **103** (2016) 124-131.
85. W-B. Li and J. Li, "Piezoelectricity in two-dimensional group-III monochalcogenides," *Nano Research* **8** (2015) 3796-3802.
84. A. Kushima, T. Koido, Y. Fujiwara, N. Kuriyama, N. Kusumi and J. Li, "Charging/Discharging Nanomorphology Asymmetry and Rate-Dependent Capacity Degradation in Li-Oxygen Battery," *Nano Letters* **15** (2015) 8260-8265.
83. W. Guo, Z. Wang and J. Li, "Diffusive versus Displacive Contact Plasticity of Nanoscale Asperities: Temperature- and Velocity-Dependent Strongest Size," *Nano Letters* **15** (2015) 6582-6585.
82. S-Z. Li, Y-G. Li, Y-C. Lo, T. Neeraj, R. Srinivasan, X-D. Ding, J. Sun, L. Qi, P. Gumbsch and J. Li, "The interaction of dislocations and hydrogen-vacancy complexes and its importance for deformation-induced proto nano-voids formation in alpha-Fe," *Int. J. Plasticity* **74** (2015) 175-191.
81. D-G. Xie, Z-J. Wang, J. Sun, J. Li, E. Ma and Z-W. Shan, "In situ study of the initiation of hydrogen bubbles at the aluminium metal/oxide interface," *Nature Materials* **14** (2015) 899-903.
80. J. Li, "DISLOCATION NUCLEATION: Diffusive origins," *Nature Materials* **14** (2015) 656-657. News & Views.
79. W-B. Li, J.M. Rieser, A.J. Liu, D.J. Durian and J. Li, "Deformation-driven diffusion and plastic flow in amorphous granular pillars," *Phys. Rev. E* **91** (2015) 062212.
78. X-F. Qian, L. Fu and J. Li, "Topological crystalline insulator nanomembrane with strain-tunable band gap," *Nano Research* **8** (2015) 967-979.
77. C. Wang, X-S. Wang, Y. Yang, A. Kushima, J-T. Chen, Y-H. Huang and J. Li, "Slurryless Li₂S/Reduced Graphene Oxide Cathode Paper for High-Performance Lithium Sulfur Battery," *Nano Letters* **15** (2015) 1796-1802.
76. A. Kushima, X-F. Qian, P. Zhao, S.L. Zhang and J. Li, "Ripplocations in van der Waals Layers," *Nano Letters* **15** (2015) 1302-1308.
75. X-F. Qian, J-W. Liu, L. Fu and J. Li, "Quantum spin Hall effect in two-dimensional transition metal dichalcogenides," *Science* **346** (2014) 1344-1347.
74. J. Sun, L-B. He, Y-C. Lo, T. Xu, H-C. Bi, L-T. Sun, Z. Zhang, S. X. Mao and J. Li, "Liquid-like pseudoelasticity of sub-10-nm crystalline silver particles," *Nature Materials* **13** (2014) 1007-1012.

73. J. Li, Z-W. Shan and E. Ma, Guest Editors, "Elastic strain engineering for unprecedented materials properties," *MRS Bulletin* **39** (2014) 108-114.
72. M-H. Wu, X-F. Qian and J. Li, "Tunable Exciton Funnel Using Moire Superlattice in Twisted van der Waals Bilayer," *Nano Letters* **14** (2014) 5350-5357.
71. W-B. Li, H-Y. Fan and J. Li, "Deviatoric Stress-Driven Fusion of Nanoparticle Superlattices," *Nano Letters* **14** (2014) 4951-4958.
70. J-J. Niu, A. Kushima, X-F. Qian, L. Qi, K. Xiang, Y-M. Chiang and J. Li, "In Situ Observation of Random Solid Solution Zone in LiFePO₄ Electrode," *Nano Letters* **14** (2014) 4005-4010.
69. P-Y. Zhao, J. Li and Y-Z. Wang, "Extended defects, ideal strength and actual strengths of finite-sized metallic glasses," *Acta Materialia* **73** (2014) 149-166.
68. X-W. Fu, C. Su, Q. Fu, X-L. Zhu, R. Zhu, C-P. Liu, Z-M. Liao, J. Xu, W-L. Guo, J. Feng, J. Li and D-P. Yu, "Tailoring Exciton Dynamics by Elastic Strain-Gradient in Semiconductors," *Advanced Materials* **26** (2014) 2572-2579.
67. B-Y. Liu, J. Wang, B. Li, L. Lu, X-Y. Zhang, Z-W. Shan, J. Li, C-L. Jia, J. Sun and E. Ma, "Twinning-like lattice reorientation without a crystallographic twinning plane," *Nature Communications* **5** (2014) 3297.
66. J.P. Lin, X.D. Li, G.J. Qiao, Z. Wang, J. Carrete, Y. Ren, L.Z. Ma, Y.J. Fei, B.F. Yang, L. Lei and J. Li, "Unexpected High-Temperature Stability of beta-Zn₄Sb₃ Opens the Door to Enhanced Thermoelectric Performance," *J. Am. Chem. Soc.* **136** (2014) 1497-1504.
65. M. Gu, A. Kushima, Y.Y. Shao, J-G. Zhang, J. Liu, N.D. Browning, J. Li and C.M. Wang, "Probing the Failure Mechanism of SnO₂ Nanowires for Sodium-Ion Batteries," *Nano Letters* **13** (2013) 5203-5211.
64. Q. Yu, L. Qi, R.K. Mishra, J. Li and A.M. Minor, "Reducing deformation anisotropy to achieve ultrahigh strength and ductility in Mg at the nanoscale," *PNAS* **110** (2013) 13289-13293.
63. J.Y. Huang, Y-C. Lo, J.J. Niu, A. Kushima, X.F. Qian, L. Zhong, S.X. Mao and J. Li, "Nanowire Liquid Pumps," *Nature Nanotechnology* **8** (2013) 277-281.
62. S.J. Hao, L.S. Cui, D.Q. Jiang, X.D. Han, Y. Ren, J. Jiang, Y.N. Liu, Z.Y. Liu, S.C. Mao, Y.D. Wang, Y. Li, X.B. Ren, X.D. Ding, S. Wang, C. Yu, X.B. Shi, M.S. Du, F. Yang, Y.J. Zheng, Z. Zhang, X.D. Li, D.E. Brown and J. Li, "A Transforming Metal Nanocomposite with Large Elastic Strain, Low Modulus, and High Strength," *Science* **339** (2013) 1191-1194.
61. P.Y. Zhao, J. Li and Y.Z. Wang, "Heterogeneously randomized STZ model of metallic glasses: Softening and extreme value statistics during deformation," *Int. J. Plasticity* **40** (2013) 1-22.

60. J. Feng, X-F. Qian, C-W. Huang and J. Li, "Strain-engineered artificial atom as a broad-spectrum solar energy funnel," *Nature Photonics* **6** (2012) 866-872.
59. A. Kushima, J.Y. Huang and J. Li, "Quantitative fracture strength and plasticity measurements of lithiated silicon nanowires by in situ TEM tensile experiments," *ACS Nano* **6** (2012) 9425-9432.
58. J. Li and L-Y. Bai, "DNA Nanotechnology: A metamaterial with memory," *Nature Nanotechnology* **7** (2012) 773-774.
57. L. Qi and J. Li, "Adsorbate interactions on surface lead to a flattened Sabatier volcano plot in reduction of oxygen," *J. Catalysis* **295** (2012) 59-69.
56. L. Qi, Y.W. Mao and J. Li, "Slip Corona Surrounding Bilayer Graphene Nanopore," *Nanoscale* **4** (2012) 5989-5997.
55. S. Sarkar, J. Li, W.T. Cox, E. Bitzek, T.J. Lenosky and Y.Z. Wang, "Finding activation pathway of coupled displacive-diffusional defect processes in atomistics: Dislocation climb in fcc copper," *Phys. Rev. B* **86** (2012) 014115.
54. X.H. Liu, Y. Liu, A. Kushima, S.L. Zhang, T. Zhu, J. Li and J.Y. Huang, "In Situ TEM Experiments of Electrochemical Lithiation and Delithiation of Individual Nanostructures," *Adv. Energy Mater.* **2** (2012) 722-741.
53. S-W. Nam, H-S. Chung, Y.C. Lo, L. Qi, J. Li, Y. Lu, A.T.C. Johnson, Y. Jung, P. Nukala, R. Agarwal, "Electrical Wind Force-Driven and Dislocation-Templated Amorphization in Phase-Change Nanowires," *Science* **336** (2012) 1561-1566.
52. H. Yang, S. Huang, X. Huang, F.F. Fan, W.T. Liang, X. H. Liu, L-Q. Chen, J. Y. Huang, J. Li, T. Zhu and S.L. Zhang, "Orientation-Dependent Interfacial Mobility Governs the Anisotropic Swelling in Lithiated Silicon Nanowires," *Nano Letters* **12** (2012) 1953-1958.
51. J.S. Qi, X.F. Qian, L. Qi, J. Feng, D.N. Shi and J. Li, "Strain-Engineering of Band Gaps in Piezoelectric Boron Nitride Nanoribbons," *Nano Letters* **12** (2012) 1224-1228.
50. Z-J. Wang, Z-W. Shan, J. Li, J. Sun and E. Ma, "Pristine-to-pristine regime of plastic deformation in submicron-sized single crystal gold particles," *Acta Mater.* **60** (2012) 1368-1377.
49. Q. Yu, L. Qi, K. Chen, R.K. Mishra, J. Li and A.M. Minor, "The Nanostructured Origin of Deformation Twinning," *Nano Letters* **12** (2012) 887-892.
48. L. Tian, Y-Q. Cheng, Z-W. Shan, J. Li, C-C. Wang, X-D. Han, J. Sun and E. Ma, "Approaching the ideal elastic limit of metallic glasses," *Nature Communications* **3** (2012) 609.
47. A. Ishii, S. Ogata, H. Kimizuka and J. Li, "Adaptive-boost molecular dynamics simulation of carbon diffusion in iron," *Phys. Rev. B* **85** (2012) 064303.
46. L. Huang, Q-J. Li, Z-W. Shan, J. Li, J. Sun and E. Ma, "A new regime for mechanical annealing and strong sample-size strengthening in body centred cubic molybdenum," *Nature Communications* **2** (2011) 547.

45. A. Kushima, X. H. Liu, G. Zhu, Z. L. Wang, J.Y. Huang and J. Li, "Leapfrog Cracking and Nanoamorphization of ZnO Nanowires during in Situ Electrochemical Lithiation," *Nano Letters* **11** (2011) 4535-4541.
44. X.H. Liu, H. Zheng, L. Zhong, S. Huang, K. Karki, L.Q. Zhang, Y. Liu, A. Kushima, W.T. Liang, J.W. Wang, J.-H. Cho, E. Epstein, S.A. Dayeh, S.T. Picraux, T. Zhu, J. Li, J.P. Sullivan, J. Cumings, C.S. Wang, S.X. Mao, Z.Z. Ye, S.L. Zhang and J.Y. Huang, "Anisotropic Swelling and Fracture of Silicon Nanowires during Lithiation," *Nano Letters* **11** (2011) 3312-3318.
43. J. Li, S. Sarkar, W. T. Cox, T. J. Lenosky, E. Bitzek and Y.Z. Wang, "Diffusive molecular dynamics and its application to nanoindentation and sintering," *Phys. Rev. B* **84** (2011) 054103.
42. J.S. Qi, J.Y. Huang, J. Feng, D.N. Shi and J. Li, "The Possibility of Chemically Inert, Graphene-Based All-Carbon Electronic Devices with 0.8 eV Gap," *ACS Nano* **5** (2011) 3475-3482.
41. J. Li, A. Kushima, J. Eapen, X. Lin, X.F. Qian, J. C. Mauro, P. Diep and S. Yip, "Computing the Viscosity of Supercooled Liquids: Markov Network Model," *PLoS ONE* **6** (2011) e17909.
40. J. Y. Huang, L. Zhong, C. M. Wang, J. P. Sullivan, W. Xu, L. Q. Zhang, S. X. Mao, N. S. Hudak, X. H. Liu, A. Subramanian, H. Y. Fan, L. Qi, A. Kushima and J. Li, "In situ observation of the electrochemical lithiation of a single SnO₂ nanowire electrode," *Science* **330** (2010) 1515-1520.
39. S. Hara and J. Li, "Adaptive strain-boost hyperdynamics simulations of stress-driven atomic processes," *Phys. Rev. B* **82** (2010) 184114.
38. T. Zhu and J. Li, "Ultra-strength materials," *Progress in Materials Science* **55** (2010) 710-757.
37. S. Z. Li, X. D. Ding, J. Li, X. B. Ren, J. Sun and E. Ma, "High-efficiency mechanical energy storage and retrieval using interfaces in nanowires," *Nano Letters* **10** (2010) 1774-1779.
36. L. Qi, J.Y. Huang, J. Feng and J. Li, "In situ observations of the nucleation and growth of atomically sharp graphene bilayer edges," *Carbon* **48** (2010) 2354-2360.
35. Q. Yu, Z.-W. Shan, J. Li, X.X. Huang, L. Xiao, J. Sun and E. Ma, "Strong crystal size effect on deformation twinning," *Nature* **463** (2010) 335-338.
34. Y. Wang and J. Li, "Phase Field Modeling of Defects and Deformation," *Acta Mater.* **58** (2010) 1212-1235. Overview No. 150.
33. Y. Mishin, M. Asta and J. Li, "Atomistic modeling of interfaces and their impact on microstructure and properties," *Acta Mater.* **58** (2010) 1117-1151. Overview No. 148.

32. J. Feng, L. Qi, J. Y. Huang and J. Li, "Geometric and electronic structure of graphene bilayer edges," *Phys. Rev. B* **80** (2009) 165407.
31. J. Y. Huang, F. Ding, B. I. Yakobson, P. Lu, L. Qi and J. Li, "In situ observation of graphene sublimation and multi-layer edge reconstructions," *PNAS* **106** (2009) 10103-10108.
30. L. Kovarik, R.R. Unocic, J. Li, P. Sarosi, C. Shen, Y. Wang and M.J. Mills, "Microtwinning and other shearing mechanisms at intermediate temperatures in Ni-based superalloys," *Progress in Materials Science* **54** (2009) 839-873.
29. X-F. Qian, J. Li, L. Qi, C-Z. Wang, T-L. Chan, Y-X. Yao, K-M. Ho and S. Yip, "Quasiatomic orbitals for *ab initio* tight-binding analysis," *Phys. Rev. B* **78** (2008) 245112.
28. S. Suresh and J. Li, "Deformation of the ultra-strong," *Nature* **456** (2008) 716-717.
27. J. Li, T.J. Lenosky, C.J. Först and S. Yip, "Thermochemical and Mechanical Stabilities of the Oxide Scale of ZrB₂+SiC and Oxygen Transport Mechanisms," *J. Am. Ceram. Soc.* **91** (2008) 1475-1480.
26. L. Qi, X-F. Qian and J. Li, "Near-neutrality of oxygen molecule adsorbed on Pt(111) surface," *Phys. Rev. Lett.* **101** (2008) 146101.
25. T. Zhu, J. Li, A. Samanta, A. Leach and K. Gall, "Temperature and Strain-Rate Dependence of Surface Dislocation Nucleation," *Phys. Rev. Lett.* **100** (2008) 025502. Cover article.
24. H. Verweij, M. C. Schillo and J. Li, "Fast Mass Transport through Carbon Nanotube Membranes," *Small* **3** (2007) 1996-2004. Concepts article.
23. Y.M. Wang, J. Li, A.V. Hamza and T.W. Barbee, Jr., "Ductile crystalline-amorphous nanolaminates," *PNAS* **104** (2007) 11155-11160.
22. J. Li, P. G. Kevrekidis, C. W. Gear and I. G. Kevrekidis, "Deciding the Nature of the Coarse Equation through Microscopic Simulations: The Baby-Bathwater Scheme," *SIAM Review* **49** (2007) 469-487.
21. J. Li, G. Lykotrafitis, M. Dao and S. Suresh, "Cytoskeletal Dynamics of Human Erythrocyte," *PNAS* **104** (2007) 4937-4942.
20. A. Gouldstone, N. Chollacoop, M. Dao, J. Li, A. Minor and Y.-L. Shen, "Indentation Across Size Scales and Disciplines: Recent Developments in Experimentation and Modeling," *Acta Mater.* **55** (2007) 4015-4039. Overview No. 142.
19. T. Zhu, J. Li, A. Samanta, H.G. Kim and S. Suresh, "Interfacial Plasticity Governs Strain Rate Sensitivity and Ductility in Nanostructured Metals," *PNAS* **104** (2007) 3031-3036. Cover article.
18. J. Li, "The Mechanics and Physics of Defect Nucleation," *MRS Bulletin* **32** (2007) 151-159.
17. J. Eapen, J. Li and S. Yip, "Mechanism of thermal transport in dilute nanocolloids," *Phys. Rev. Lett.* **98** (2007) 028302.

16. F. Shimizu, S. Ogata and J. Li, "Yield Point of Metallic Glass," *Acta Mater.* **54** (2006) 4293-4298.
15. X. Lin, J. Li, C. J. Först and S. Yip, "Multiple Self-Localized Electronic States in Trans-Polyacetylene," *PNAS* **103** (2006) 8943-8946.
14. A. Bongiorno, C.J. Först, R.K. Kalia, J. Li, J. Marschall, A. Nakano, M.M. Opeka, I.G. Talmy, P. Vashishta and S. Yip, "A Perspective on Modeling Materials in Extreme Environments: Oxidation of Ultra-High Temperature Ceramics," *MRS Bulletin* **31** (2006) 410-418.
13. X. Lin, J. Li and S. Yip, "Controlling Bending and Twisting of Conjugated Polymers via Solitons," *Phys. Rev. Lett.* **95** (2005) 198303.
12. J. Li, M. Dao, C. T. Lim and S. Suresh, "Spectrin-level analysis of shape evolution and large deformation elasticity of erythrocyte," *Biophys. J.* **88** (2005) 3707-3719.
11. T. Zhu, J. Li and S. Yip, "Atomistic configurations and energetics of crack extension in silicon," *Phys. Rev. Lett.* **93** (2004) 205504.
10. T. Zhu, J. Li and S. Yip, "Atomistic study of dislocation loop emission from a crack tip," *Phys. Rev. Lett.* **93** (2004) 025503.
9. J. Li, A.H.W. Ngan and P. Gumbsch, "Atomistic modeling of mechanical behavior," *Acta Mater.* (Golden Jubilee Issue) **51** (2003) 5711-42.
8. N.H. de Leeuw, Z.M. Du, J. Li, S. Yip and T. Zhu, "Computer modeling study of the effect of hydration on the stability of a silica nanotube," *Nano Letters* **3** (2003) 1347-52.
7. J. Li, "AtomEye: an efficient atomistic configuration viewer," *Modelling Simul. Mater. Sci. Eng.* **11** (2003) 173-7.
6. S. Ogata, J. Li and S. Yip, "Ideal pure shear strength of aluminum and copper," *Science* **298** (2002) 807-11.
5. J. Li, K.J. Van Vliet, T. Zhu, S. Yip and S. Suresh, "Atomistic mechanism governing elastic limit and incipient plasticity in crystals," *Nature* **418** (2002) 307-10.
4. W. Cai, V.V. Bulatov, J.-P. Chang, J. Li and S. Yip, "Anisotropic elastic interactions of a periodic dislocation array," *Phys. Rev. Lett.* **86** (2001) 5727-30.
3. J. Li, L.J. Porter and S. Yip, "Atomistic modeling of finite-temperature properties of crystalline β -SiC: II. thermal conductivity and effects of point defects," *J. Nucl. Mater.* **255** (1998) 139-52.
2. J. Li, D.Y. Liao and S. Yip, "Coupling continuum to molecular-dynamics simulation: reflecting particle method and the field estimator," *Phys. Rev. E* **57** (1998) 7259-67.
1. J.H. Wang, J. Li, S. Yip, S. Phillpot and D. Wolf, "Mechanical instabilities of homogeneous crystals," *Phys. Rev. B* **52** (1995) 12627-35.