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 worldwide 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 (**280+ peer-reviewed papers, 15,000+ SCI cites, h-index 63**)[1]

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 Materialia* **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.

[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.

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 Li4Ti5O12/TiO2 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 SnO2/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 COx-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.

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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.

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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.

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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.

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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.

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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.

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