

Ju Li

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- Experience**
- 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
- Tongji University* Jiading, Shanghai, China
Adjunct Professor (1/2016-6/2021), Department of Materials Science and Engineering
- Xi'an Jiaotong University* Xi'an, Shaanxi, China
Adjunct Professor (1/2009-7/2020), School of Materials Science and Engineering
- University of Pennsylvania* Philadelphia, PA 19104
Associate Professor (9/2007-6/2011),
Department of Materials Science and Engineering
- Ohio State University* Columbus, OH 43210
Assistant Professor (9/2002-9/2007),
Department of Materials Science and Engineering
- 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
- Honda R&D Co., Ltd. Wako Research Center* Wako-shi, Saitama, Japan
Visiting Scientist (1/13-2/14/2002)
- Ames Laboratory, USDOE* Ames, Iowa 50011
Visiting Scientist
(7/17-29/96, 6/11-7/3/97, 7/12-8/22/98, 12/19/00-1/19/01, 8/6-20/01, 12/17-24/02,
10/11-19/03, 7/14-23/05)
- Education**
- Massachusetts Institute of Technology* Cambridge, MA 02139
Department of Nuclear Engineering (1994-2000) Ph.D., Sept. 2000
- Cumulative GPA: 5.0/5.0 (618 graduate degree credits)
40 graduate-level courses offered by 8 MIT departments.
- 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 Minerals, Metals & Materials Society (2022)

Research.com top scientist (89th in 2022) in materials science:
<https://research.com/scientists-rankings/materials-science/us>

Fellow of the American Association for the Advancement of Science (2020)

Webometrics *h* > 100 list (global rank 3169 Mar 2022; 3383 Mar 2021; rank 3841 Oct 2020)

Clarivate *Highly Cited Researchers* 2019-2020 in *Cross-Field*, 2018 in *Materials Science* category.

MIT *Committed to Caring* Award (2018)

Fellow of the Materials Research Society (2017)

2016 R&D 100 Award, CATEGORY Mechanical/Materials, “Stress-Induced Fabrication of Functionally Designed Nanomaterials”, Hongyou Fan, Willie Luk, Paul Clem, Tommy Ao, Jack Wise, Randy Hickman, Gordon Leifeste, Dawn Flicker, Sheng Liu, Igal Brener, Kaifu Bian, Leanne Alarid, Michael Sinclair, Hattie Schunk, Christina Ting, Wenbin Li, Ju Li, Zhongwu Wang, Binsong Li, Huimeng Wu.

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), for “a young person in the broad fields of metallurgy and materials science for exceptional promise of a successful career”

Technology Review TR35 award, for 35 “world’s top innovators” under age 35 (2007)

National Academy of Engineering U.S. Frontiers of Engineering Symposium (Microsoft Research, Sept. 24-26, 2007), “that brings together 100 of the nation’s outstanding young engineers (ages 30-45)”, and German-American Frontiers of Engineering Symposium (Oak Ridge, April 22-25, 2010) co-sponsored by the Alexander von Humboldt Foundation.

Materials Research Society (MRS) 2006 Outstanding Young Investigator Award, “to recognize outstanding, interdisciplinary scientific work in materials research by a young scientist or engineer”

Ohio State University College of Engineering 2006 Lumley Research Award

Presidential Early Career Award for Scientists and Engineers (PECASE) 2005, “the highest honor bestowed by the United States Government on scientists and engineers beginning their independent careers”

Outstanding Paper Award in the Fifth International Conference on Advanced Materials 1999, sponsored by the International Union of Materials Research Societies (IUMRS). (10 out of ~ 2, 000 papers)

Materials Research Society (MRS) Graduate Student Silver Medalist in 1998.

Sole recipient of the 1996-1997 MIT Nuclear Engineering Department Manson Benedict Fellowship.

Two Letters of Commendation (1996,1997) from MIT Nuclear Engineering Department for outstanding academic performance.

**Advisee
Awards**

NeurIPS 2023 (Neural Information Processing Systems) Best Student Paper Award, Zhichu Ren, Zhen Zhang, Yunsheng Tian and Ju Li, “Accelerated High-Entropy Alloys Discovery for Electrocatalysis via Robotic-Aided Active Learning,” Workshop on Adaptive Experimental Design and Active Learning in the Real World (RealML), presented on December 16, 2023 in NeurIPS 2023 New Orleans, the top paper out of 7 spotlight talks, ~ 80 accepted papers.

2023-2024 MathWorks Engineering Fellow for Hao Tang, in recognition of “outstanding academic record, exceptional background, and promising future,” that provides up to \$96,600 to support tuition, stipend, and health insurance.

2020 Del Favero Thesis Prize for the best PhD thesis work in Department of Nuclear Science and Engineering, Cong Su, “Atomic Engineering - Controlling Atoms with Electron Irradiation for Quantum Devices”.

2020-2021 MathWorks Engineering Fellowship for Haowei Xu, “for outstanding academic record, exceptional background, and promising future,” that provides \$70,000 to support tuition, stipend and health insurance.

Kavli Ensi Heising-Simons junior fellowship for Cong Su at UC Berkeley in 2019.

Best Overall Research Award and Best in Materials Science and Technology Award, Yang Yang, “The Necessity of Full-3D Monte Carlo Simulations for Ion Irradiation,” 2017 American Nuclear Society Student Conference, Pittsburgh, Pennsylvania, April 6-9, 2017.

2016 Del Favero Lecture for the best PhD thesis work in Department of Nuclear Science and Engineering, Mingda Li, “Radiation Explorer and Designer — Radiation physics today for material sciences tomorrow,” January 28, 2016.

Best Poster Award, MRS Spring Meeting, April 6-10, 2015, San Francisco, California: Sangtae Kim, Mechanical Energy Harvesters with Extended Current Pulse Duration Based on Electrochemically Alloyed Electrodes.

Best Poster Award, Gordon Research Conferences on Physical Metallurgy, August 2-7, 2009, Proctor Academy, Andover, NH: Erik Bitzek, William T. Cox, Sanket Sarkar, Thomas J. Lenosky, Yunzhi Wang, Ju Li, “Atomic-Scale Modeling of Diffusion-Driven Microstructure Evolution”

**Continued
Education**

MIT Professional Education short course *Reinforcement Learning and Advanced Reinforcement Learning*, MIT Campus, July 25 - 29, 2022, taught by Prof. Pulkit Agrawal and Prof. Cathy Wu.

MIT Professional Education short course *Discrete Choice Analysis: Predicting Individual Behavior and Market Demand*, MIT Campus, June 7 - 11, 2021, taught by Prof. Moshe E. Ben-Akiva.

MIT Professional Education short course *Computational Design for AI in Manufacturing*, MIT Campus, July 13 - 17, 2020, taught by Prof. Wojciech Matusik.

Machine Learning for Materials Research Bootcamp & Workshop on Autonomous Materials Research, August 5-9, 2019, taught by A. Gilad Kusne, Alexei Belianinov, Daniel Samarov, Ichiro Takeuchi.

MIT Professional Education short course *Deep Learning for AI and Computer Vision*, MIT Campus, July 29-August 1, 2019, taught by Prof. Antonio Torralba and Prof. Phillip Isola.

MIT Professional Education short course *The Invention Process: Invention in the Context of Innovation*, MIT Campus, July 30-Aug. 3, 2018, taught by Prof. Emanuel Sachs.

MIT Professional Education short course *Applied Cybersecurity*, MIT Campus, June 19-23, 2017, taught by Prof. John R. Williams and Dr. Abel Sanchez.

MIT Professional Education short course *Machine Learning for Big Data and Text Processing*, MIT Campus, July 18-22, 2016, taught by Prof. Regina Barzilay and Prof. Tommi Jaakkola.

MIT Professional Education short course *Additive Manufacturing: From 3D Printing To The Factory Floor*, MIT Campus, July 21-25, 2014, taught by Prof. Anastasios John Hart. Won the first place (based on audience vote) on class project “Deployable Fractals” with Dr. Jan Balewski.

MIT Professional Education short course PI.61s *Leadership Skills for Engineering and Science Faculty*, MIT Campus, June 10-11, 2013, taught by Prof. Charles E. Leiserson and Chuck McVinney.

Teaching

Instructor, MIT 3.33J/22.73J *Defects in Materials* (Fall Term, 2016-2020)

Instructor, MIT 22.14 *Materials in Nuclear Engineering* (Spring Term, 2017-2021)

Instructor, MIT 22.02 *Introduction to Applied Nuclear Physics* (Spring Term, 2014,2021)

Instructor, MIT 22.101 *Applied Nuclear Physics* (Fall Term, 2012)

Instructor, MIT 3.14/3.40/22.71J *Physical Metallurgy* (Fall Term, 2012,2013,2014)

Instructor, MIT 22.107 *Computational Nuclear Science and Engineering* (Spring Term, 2012,2013)

Instructor, Penn MSE440/540 *Phase Transformations* (Spring Term, 2008, 2009, 2010, 2011)

Instructor, OSU MSE730 *Thermodynamics of Materials* (Wi Qtr., 2004,2005,2006,2007); Penn MSE 530 *Thermodynamics of Materials* (Fall Term, 2008, 2009, 2010)

Instructor (with Suliman Dregia and Yunzhi Wang), OSU MSE894 *Theoretical Methods in Materials Science* (Au Qtr., 2006)

Instructor, OSU MSE695.01 *Senior Design Project I* (Au Qtr., 2003,2004,2005,2006)

Instructor, OSU MSE533 *Modeling of Materials Processing Methods* (Sp Qtr., 2003,2004,2005,2006)

Instructor, OSU MSE564 *Mechanical Behavior and Material Microstructure* (Wi Qtr., 2003)

Instructor, OSU MSE795 *Graduate Seminar and Colloquium* (Au Qtr., 2004)

Instructor, MIT 22.51 *Interactions of Radiation with Matter* (Fall 2001)

Course webpage: <http://web.mit.edu/22.51/www/>

Co-instructor, MIT 22.53 *Statistical Processes and Atomistic Simulations* (Fall 2000) Course webpage: <http://web.mit.edu/22.53/www/>

Instructor, GEM⁴ Summer School on Cell and Molecular Mechanics in BioMedicine, with a focus on infectious diseases, August 7-18, 2006, MIT, gave four lectures. with a focus on cancer, June 25 - July 6, 2007, National University of Singapore, gave three lectures.

Advising

PhD adviser of Dr. Liang Qi (Penn MSE, August 2009), Dr. Amit Samanta (Penn MSE, August 2009), Wenbin Li (MIT DMSE), Mingda Li (MIT NSE), Sina Moeini Ardakani (MIT CEE), Yang Yang (MIT NSE), Sangtae Kim (MIT DMSE), Cong Su (MIT NSE), David Bloore (MIT NSE).

Master's degree adviser of Liang Qi (OSU MSE, March 2007), Amit Samanta (OSU MSE, June 2007), Liu Cao (OSU MSE, September 2007), Zheng Li (Penn MSE, 2008), Wei Liu (Penn MSE, August 2009), Wenbin Li (Penn MSE, May 2011), Cheng-Wei Avis Huang (Penn MSE, May 2011), Hsu-Chung Luker Ko (Penn MSE, May 2011).

Postdoctoral adviser of Dr. James Jianguo Yu (8/2003-10/2004), Dr. Thomas J. Lenosky (8/2006-8/2007), Dr. Erik Bitzek (8/2008-12/2009), Dr. Ji Feng (2/2009-1/2011), Dr. Liang Qi (9/2009-8/2012), Dr. Yu Chieh Lo (11/2009-), Dr. Akihiro Kushima (4/2010-), Dr. JunJie Niu (1/2011-), Dr. Xiaofeng Qian (7/2011-), Dr. Kejie Zhao (9/2012-), Dr. Xiaohui Ning (1/2013-3/2013), Dr. Jinhyuk Lee, Dr. Chao Wang, Dr. Kangpyo So.

Host of visiting scholars: Prof. Shigenobu Ogata (Osaka University), Dr. Futoshi Shimizu (Japan Atomic Energy Agency), Joshua Fujiwara (Honda), Mitsumoto Kawai (Honda), Prof. ZhengPing Fu (University of Science and Technology of China), Prof. Shotaro Hara (University of Tokyo), Prof. Erik Bitzek (Universität Erlangen-Nürnberg), Yvonne Ritter (Technische Universität Darmstadt), Prof. Yonggang Li (Institute of Solid State Physics, Chinese Academy of Sciences, 9/2012-), Prof. JianMing Jia (Huaiyin Normal University, 9/2012-), Prof. Hongyi Li (Beijing University of Technology, 2/2013-).

Host of visiting students: Hyoungh Gyu Kim (Korea Advanced Institute of Science and Technology, 1-7/2005), JingShan Qi (Nanjing University of Aeronautics and Astronautics, 6/2009-9/2010), Yi-Gil Cho (Seoul National University, 7/2010-3/2011), Degang Xie (Xi'an Jiaotong University, 9/11-8/12), Akio Ishii (Osaka University, 1/2012-4/2012), Sangchul Yeo (KAIST, 7/2012-10/2012), Dmitry Vasilev (Skoltech, 9/2012-), Ira Zhelavskaya (Skoltech, 2/2013-).

Presentations Invited talk at 2024 International Workshop on Materials Behavior at Micro- and Nano-Scale, Xi'an Jiaotong University, Xi'an, Shaanxi, China, May 27-29, 2024.

Invited talk at 2024 ACS Spring Meeting, New Orleans, March 17-21, 2024.

Three invited talks at 2024 TMS Annual Meeting, Orlando, March 3-7, 2024.

Two invited talks at 2023 MRS Fall Meeting, Boston, Nov. 26-Dec. 1, 2023.

Keynote talk, "Autonomous Experiments and AI for Material Science," Nov. 12, 2023, MIT, AASF 2nd annual meeting Public Science Symposium *AI for Science and Medicine*.

LBL MaterialsProject Invited Seminar, "A Universal Empirical Interatomic Potential," June 29, 2023.

School of Engineering Invited talk, "AI for Clean Energy," June 5, 2023, The University of Jordan, Amman, Jordan.

Invited Physics Colloquium, “Elastic Strain Engineering for Unprecedented Properties,” June 1, 2023, Weizmann Institute of Science, Rehovot, Israel.

Plenary talk, “Deep Elastic Strain Engineering,” European Mechanics Society Colloquium 636 Modulation of Physico-Chemical Processes by Elastic Strain Engineering, May 22-24, 2023, Besançon, France (636.euromech.org).

Invited talk, “Batteries with Earth-Abundant Elements: new developments in protic solid & liquid electrolytes,” 2022 MRS Fall Meeting, Boston, Dec. 2, 2022.

Invited talk, Oregon State University, Materials Science Program, Nov. 10, 2022.

Plenary talk, NANO INTERNATIONAL FORUM 2022, Nuevo Leon Nanotechnology Cluster, Mexico, Nov. 10, 2022.

Invited talk, graduate seminar at Department of Materials Science and Engineering, Drexel University, May 18, 2022.

iCANX Talks 94 “[Extreme Materials Processing for Clean Energy](#),” with Haixia Alice Zhang, Martin Thuo, Balla Diop Ngom, Emily Rinko, April 22, 2022.

Invited talk, Materials Science and Engineering at Virginia Tech, March 23, 2022.

Invited talk, Indo-US SPARC virtual workshop on “India Mission for Green Hydrogen and Go Electric,” March 17, 2022.

Invited seminar, Department of Chemistry, Illinois Institute of Technology, Feb. 15, 2022.

Invited talk, 13th US-China Green Energy Forum, “Challenges for grid-scale battery energy storage,” Jan. 5, 2022.

Keynote talk “[Chemomechanics of Li-metal Anode](#),” at International Conference on Advanced Materials and Mechanical Characterization (ICAMMC 2021 Virtual), SRM Institute of Science and Technology (SRMIST), Chennai, December 3, 2021.

TÜBİTAK TBAE (Temel Bilimler Araştırma Enstitüsü - Research Institute for Fundamental Sciences) Interdisciplinary Seminar “[Elastic Strain Engineering for Unprecedented Properties](#),” November 20, 2021.

Invited talk, Materials Science and Engineering Seminar, The University of Texas at Arlington, November 5, 2021.

Invited seminar, Materials Science & Engineering department at King Fahad University of Petroleum & Minerals (KFUPM), November 1, 2021.

Keynote talk, International Battery Materials Association IBA-2021, October 24-29, 2021, Xiamen, China.

Panelist, TDK Ventures Energy Week, October 18-21, 2021.

Stanford StorageX International Symposium, “Li-metal Engine: Chemomechanics of 3D Solid-state Anodes,” October 8, 2021.

Keynote talk “From Novel Materials Processing to Battery Energy Storage,” Smartly Engineered Materials for Energy and Environment (SE-MAT) International Meeting, August 8-9, 2021.

Keynote talk “New Battery Chemistries and Materials Issues,” International Conference on Electric and Intelligent Vehicles (ICEIV2021), Nanjiang, June 25, 2021.

Extreme Mechanics Letters Webinar, June 16, 2021.

Invited talk at Duke University Center for Autonomous Materials Design, May 27, 2021.

Invited talk at *Nature Sustainability* Panel on Sustainable Batteries, April 26, 2021.

Two invited talks at 2021 Virtual MRS Spring Meeting, April 17-23, 2021.

Invited seminar, “Radiation at Atomic & Nanoscale,” Mechanical Engineering Distinguished Speaker Series, Virginia Polytechnic Institute and State University, March 4, 2021.

Plenary talk, 1st International Conference on Data Driven Materials Innovation 2021 (D2MI2021), February 1-3, 2021.

Invited distinguished lecture, University of Toronto, November 4, 2020.

Invited talk, Boston Chapter of the IEEE Photonics Society, “Machine Learning and Optical Systems”, October 14, 2020.

Invited seminar, Department of Materials Science and NanoEngineering, Rice University, October 1, 2020.

UC Berkeley MSE seminar (student-nominated seminar speaker) on Feb. 27, 2020.

Two invited talks at 2019 MRS Fall Meeting, Boston, December 1-6, 2019.

Keynote talk, NANOKOREA 2019, Seoul, Korea, July 3, 2019.

Invited talk, Department of Chemical and Biomolecular Engineering, Yonsei University, Seoul, Korea, July 2, 2019.

Two invited talks at 2019 MRS Spring Meeting, Phoenix, Arizona, April 22-26, 2019.

Invited seminar at School for Engineering of Matter, Transport and Energy, Arizona State University, April 19, 2019.

Invited talk, Donghua University, Shanghai, Dec. 24, 2018.

Invited talk at Mechanical Science and Engineering Seminar, University of Illinois Urbana-Champaign, Dec. 11, 2018.

Two invited talks at 2018 MRS Fall Meeting, Boston, November 25-30, 2018.

Invited talk at 9th Multiscale Materials Modeling (MMM) conference at Osaka International Convention Center, Osaka, Japan, Oct. 28 - Nov. 2, 2018.

Invited talk at Beijing University of Chemical Technology, October 23, 2018.

Two invited talks at ACS Fall 2018 National Meeting in Boston, August 19-23, 2018.

Invited talk at Huazhong University of Science and Technology, Wuhan, China, June 13, 2018.

Invited talk at the 11th International Workshop on Materials Behavior at the Micro- and Nano-Scale, Xi'an, China, June 9, 2018.

Invited talk at Texas Materials Institute Seminar Series, The University of Texas at Austin, March 28, 2018.

Invited talk at GE Global Research, Niskayuna NY, Feb. 2, 2018.

Invited talk at 2017 MRS Fall Meeting, Boston, November 27, 2017.

Plenary talk, International Forum on Advanced Materials IFAM2017 (<http://ifamat.com>), Xian, China, November 11, 2017.

Invited talk, Institute of Solid State Physics, Chinese Academy of Science, Hefei, China, November 10, 2017.

Invited talk, International Workshop on Physics of Nanofriction and Tribology, International Center for Quantum Design of Functional Materials (ICQD) at University of Science and Technology of China (USTC), Hefei, China, November 8-10, 2017.

Invited talk, Summer school on new algorithms for exploring structure and dynamics of interfaces, The University of British Columbia, Vancouver, Canada, July 31-Aug 1, 2017.

Invited talk, "Interfaces in Environments," Gordon Research Conference on Physical Metallurgy, University of New England, Biddeford, Maine, July 23-28, 2017.

Plenary speaker, "Elastic Strain Engineering", Chinese Materials Conference (C-MRS) 2017, Yinchuan, Ningxia, July 9-12, 2017.

Invited talks, Ningbo Institute of Materials Technology & Engineering, May 27, 2017.

Invited Colloquium, Northwestern Polytechnical University, May 25, 2017.

Stanford Materials Science and Engineering Colloquium, April 21, 2017.

Two invited talks at 2017 MRS Spring Meeting, Phoenix, April 17-21, 2017.

Invited talk at Yale Energy Sciences Institute Symposium, April 10-11, 2017.

Invited talk at Spring ACS Meeting in San Francisco, April 2-6, 2017.

Invited talk at MIT-KAIST symposium on Future of Nuclear Technology, Dept. Nuclear and Quantum Engineering, KAIST, Daejeon, South Korea, March 30, 2017.

Invited talk at Center for Integrated Nanostructure Physics, Sungkyunkwan University, Suwon, South Korea, Jan. 25, 2017.

Invited talk at School of Energy and Chemical Engineering, UNIST, Ulsan, South Korea, Jan. 24, 2017.

Invited talk at 2016 MRS Fall Meeting, Boston, Dec.1, 2016.

Invited talk at General Atomics, San Diego, CA, Oct. 24, 2016.

Invited talk at International Conference on Advanced Lithium Batteries for Automobile Applications (ABAA9), Huzhou, Zhejiang, China, Oct. 19, 2016.

Invited talk at Department of Physics and Texas Center for Superconductivity, University of Houston, Sept. 13, 2016.

Invited talk at Battery Technology Department, Argonne National Laboratory, Aug. 11, 2016.

Invited talk at IBM T.J. Watson Research Center, Yorktown Heights, New York, June 28, 2016.

Invited talk at ExxonMobil Research & Engineering, Annandale, New Jersey, June 27, 2016.

Invited talk at Research, Innovation and Leadership at the Crossroads of Science, Engineering and Medicine, A Conference Honoring Subra Suresh on his sixtieth birthday, Madrid, Spain, June 15-17, 2016.

Invited talk at 9th International Workshop on Materials Behavior at the Micro-and Nano-Scale, Xi'an, China, June 1-3, 2016.

Invited talk at Symposium MD2: Tuning Properties by Elastic Strain Engineering—From Modeling to Making and Measuring, 2016 MRS Spring Meeting & Exhibit, March 28-April 1, 2016 Phoenix, Arizona.

Invited talk at 2015 MRS Fall Meeting, Boston, December 1, 2015.

Invited talk at 26th Annual Harry C. Allen, Jr. Symposium, Gustav H. Carlson School of Chemistry, Clark University, October 31, 2015.

Invited talk, Transforming Energy Lectures, University of Maryland, Sept. 2, 2015.

Invited talk, 250th ACS National Meeting & Exposition, Boston, August 16-20, 2015.

Invited talk, 8th International Workshop on Materials Behavior at the Micro- and Nano-scale, Xi'an, China, June 1-3, 2015.

Invited talk, MIT MechE Micro-Nano Seminar, Mar. 11, 2015.

Invited talk, APS March Meeting, San Antonio, March 6, 2015.

Invited talk, School of Materials Science and Engineering, Shanghai Jiaotong University, Jan. 16, 2015.

Invited talk, School of Materials Science and Engineering, Tongji University, Shanghai, Jan. 14, 2015.

Invited talk, Shanghai Institute Of Applied Physics, Chinese Academy of Sciences, Jan. 6, 2015.

Invited talk at Microscience Microscopy Congress 2014 (MMC2014), Manchester, UK, June 30-July 3, 2014.

Invited talks at Korea Institute of Science and Technology (KIST) and Department of Materials Science and Engineering, Seoul National University, Seoul, Korea, June 27-28, 2014.

Keynote talk at the NanoNuclear Materials, Fuels, Applications symposium at Cleantech2014 and TechConnect World 2014, National Innovation Summit, Gaylord National Resort & Convention Center, June 16-19, 2014.

Colloquium and invited talks at Departamento de Fisica, Universidad de Chile, Santiago, Chile, June 2-6, 2014.

Two invited talks, 2014 MRS Spring Meeting, San Francisco, April 21-25, 2014.

Invited talk, Department of Mechanical Engineering and Materials Science, University of Pittsburgh, Apr. 8, 2014.

Two invited talks, King Abdullah University of Science and Technology, Advanced Nanofabrication, Imaging and Characterization Core Lab, Thuwal, Saudi Arabia, March 23 and 24, 2014.

Invited talk, Center for Functional Nanomaterials at Brookhaven National Laboratory, Upton, January 28, 2014.

Invited talk, Idaho National Laboratory, Idaho Falls, August 22, 2013.

Invited talk, Air Force Research Laboratory, Wright-Patterson Air Force Base, Ohio, Jan. 22, 2013.

Invited talk, 2012 MRS Fall Meeting, Boston, November 27, 2012.

Plenary talk, “Diffusive Molecular Dynamics (DMD): Simulating Displacive-Diffusive Transformations without Tracking Billions of Hops,” Multiscale Materials Modeling (MMM) 2012 conference, October 15-19, Biopolis, Singapore.

Invited talk, Nanoscale Science and Engineering Seminar Series, University of California at Berkeley, April 13, 2012.

Invited talk, 2012 MRS Spring Meeting, San Francisco, April 9-13, 2012.

Keynote talk, TMS 2012 Annual Meeting & Exhibition, Orlando, March 11-15, 2012.

Invited talk, APS March Meeting, Boston, February 27-March 2, 2012.

Invited talk, Plasticity 2012, San Juan, Puerto Rico, January 3-8, 2012.

Joint MIT ANS Student Chapter / faculty seminar on “Nanoscale electrochemical tests: in situ TEM experiments and modeling”, November 21, 2011.

First Annual Richard K. Osborn Lecture, Department of Nuclear Engineering and Radiological Sciences, University of Michigan, Stamps Auditorium, September 23, 2011.

Lee Hsun Young Scientist Lecture Series on Materials Science, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China, July 18, 2011.

Keynote presentation, ASME McMat2011, symposium on Low Dimensional Carbon NanoMaterials: Properties and Applications, Chicago, May 31-June 2, 2011.

Invited talk, Electron Microscopy and Multiscale Modeling 2011, Granlibakken Conference Center and Lodge, May 22-27, 2011.

Invited talk, Pennergy Symposium “Materials Under Extremes,” April 9, 2011, Philadelphia.

Two invited talks, TMS 2011 Annual Meeting & Exhibition, San Diego, February 27 - March 3, 2011.

Invited talk, Harvard Applied Mechanics Colloquium, February 2, 2011.

Invited talk, MRS Fall Meeting, Boston, November 29 - December 3, 2010.

Microstructure Modelling symposium, MMM2010, the Fifth Conference on Multiscale Material Modelling, Freiburg, Germany, October 7, 2010.

Penn Department of Mechanical Engineering and Applied Mechanics Seminar Series, September 16, 2010.

Invited talk, Physics and Astronomy Colloquium Series at University of Southern California, August 30, 2010.

Invited talk, Department of Engineering Science and Mechanics, Pennsylvania State University, July 16, 2010.

Invited talk, 17th International Symposium on Metastable, Amorphous and Nanostructured Materials (ISMANAM 2010), Zurich, Switzerland, July 4 - 9, 2010.

Invited talk, Sixth International Conference on Materials Structure & Micromechanics of Fracture (MSMF6), Brno, Czech Republic, June 28 - 30, 2010.

Invited talk, Department Werkstoffwissenschaften, Lehrstuhl WWI: Allgemeine Werkstoffeigenschaften, Universitat Erlangen-Nurnberg, Germany, June 24, 2010.

Invited talk, International Workshop on Materials Behavior at Micro- and Nano-Scale, Xi'an, China, June 11, 2010.

Invited talk, International Conference on Mechanical Properties of Materials (ICMPM), Hangzhou, China, May 27, 2010.

Two invited talks, 2010 SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, May 23, 2010.

Invited talk, Materials Science and Engineering Seminar, University of Tennessee, Knoxville, April 26, 2010.

Invited talk, Materials Science and Engineering Seminar, Rensselaer Polytechnic Institute, Troy, April 7, 2010.

Invited talk, TMS 2010 Annual Meeting & Exhibition, Seattle, February 14-18, 2010.

Keynote talk (40 min), mini-symposium Finite Plasticity & Viscoplasticity of Conventional & Emerging Materials (In celebration of 65 Years of Akhtar Khan), Plasticity 2010, St. Kitts, West Indies, January 3-8, 2010.

Invited talk, MIT Center for Computational Engineering (CCE), December 2, 2009.

Invited talk, MRS Fall Meeting, symposium *Mechanical Behavior of Nanomaterials Experiments and Modeling*, Boston, November 30 - December 4, 2009.

Invited talk, Civil Infrastructure Seminar, School of Civil and Environmental Engineering, Cornell University, November 10, 2009.

Invited talk, Mechanical & Aerospace Engineering Seminar, The University of Texas at Arlington, September 4, 2009.

Invited talk, Department of Mechanical Engineering Seminar, University Of Houston, September 3, 2009.

Invited talk, *Workshop on Probing the Limits of Strength*, Lawrence Berkeley National Laboratory, Berkeley, California, August 11-12, 2009.

Invited talk, “In-situ Observation of Graphene Sublimation and Edge Reconstructions,” mini-symposium *Graphene growth and properties through experiments and simulations*, tenth U.S. National Congress on Computational Mechanics (US-NCCM X), Columbus, July 16-19, 2009.

Invited talk, School of Materials Science and Engineering, Shanghai Jiao Tong University, June 10, 2009.

Invited talk, International Workshop on Size Effect on Materials Mechanical Behavior, Beijing, May 24 - 26, 2009.

Invited talk, “The Coming of Age of Ultra-Strength Materials,” Center for Integrated Nanotechnologies (CINT), Sandia National Laboratories, Albuquerque, New Mexico, May 7, 2009.

Invited talk, Othmer-Jacobs Department of Chemical and Biological Engineering, Polytechnic Institute of NYU, Brooklyn, New York, May 4, 2009.

Invited talk, MRS Spring Meeting, symposium *Probing Mechanics at Nanoscale Dimensions*, San Francisco, April 13-17, 2009.

Invited talk, Shanghai Institute of Ceramics, March 10, 2009.

Invited talk, TMS 2009 Annual Meeting & Exhibition, San Francisco, February 15-19, 2009.

Keynote talk (40 min), “Tensile Ductility of Nanostructured Metals,” Plasticity 2009, St. Thomas, U.S. Virgin Islands, January 3-8, 2009.

Invited talk, Workshop on Mechanical Behaviors of Micro/Nano Materials, XiAn Jiao Tong University, December 30-31, 2008.

Two invited talks, National Sun Yat-sen University, Kaohsiung, Taiwan, December 13-21, 2008.

Invited talk, Georgia Institute of Technology Woodruff School of Mechanical Engineering Seminar, Oct. 23, 2008.

Invited talk, Dislocations 2008, Hong Kong, Oct. 13-17, 2008.

Invited talk, Brown University Joint Materials/Solid Mechanics Seminar, September 12, 2008.

Invited talk, “Plasticity in amorphous and nanocrystalline metals,” Gordon Research Conference on Thin Film & Small Scale Mechanical Behavior, Colby College, Maine, July 27 - August 1, 2008.

Two invited lectures, Workshop on Multi-Scale Modeling of Moving Interfaces in Materials, Katholieke Universiteit Leuven, Belgium, July 2-4, 2008.

Invited talk, 2nd International Conference on Heterogeneous Materials Mechanics (ICHMM-2008), HuangShan, China, June 3-8, 2008.

Invited talk, International Workshop on *in situ* Electron Microscopy in Advanced Materials Research, Beijing, May 31 - June 2, 2008.

Invited talk, NIST 2008 Diffusion Workshop, Gaithersburg, Maryland, May 12-13, 2008.

Invited talk, TMS 2008 Annual Meeting & Exhibition, New Orleans, March 9-13, 2008.

Invited talk, International Workshop on Small Scale Plasticity, Braunwald, Switzerland, September 5-8, 2007.

Keynote talk (45 min), “Cytoskeletal Dynamics Simulations of Red Blood Cell,” ninth U.S. National Congress on Computational Mechanics (USNCCM IX), San Francisco, July 22-26, 2007.

Invited seminar at Department of Aerospace and Mechanical Engineering, University of Notre Dame, March 20, 2007.

Los Alamos National Lab Physics & Theoretical Colloquium, March 15, 2007, 2007.

Invited talk, “Shear localization lengthscale in metallic glasses,” Center for Advanced Metallic and Ceramic Systems (CAMCS) Seminar, Johns Hopkins University, Baltimore, Maryland, January 3, 2007.

Invited talk, “[Yield Point of Metallic Glass](#),” Pacific Northwest National Laboratory, Richland, WA, September 15, 2006.

Invited talk, “Atomistic Modeling of Rate Dependence of Deformation and Fracture,” 232nd ACS National Meeting, San Francisco, September 10-14, 2006.

MRS OYI presentation, “The Mechanics and Physics of Defect Nucleation,” San Francisco, April 19, 2006.

Invited talk, “[A minimal mesoscopic model of the self-assembly and micro-rheology of red blood cell cytoskeleton](#),” *First International Conference on Mechanics of Biomaterials & Tissues*, Waikoloa, Hawaii, December 11-15, 2005.

Invited talk, “Modified Frenkel model and ductility of solids,” *International Workshop on Nanomechanics*, Asilomar conference grounds, Pacific Grove, California, July 14-17, 2004.

Invited talk, “How bonds break in shear and why it matters,” Case Western Reserve University Materials Science and Engineering Departmental Colloquium, September 16, 2003.

Invited talk, AFOSR *Materials Engineering in Affordable New Systems (MEANS)* workshop, Boulder, Colorado, August 6-8, 2003.

Invited talk, “Coupling coarse variables to microscopic simulations,” *Workshop on Algorithm Refinement*, Los Alamos National Laboratory, April 22-24, 2002.

Invited talk, “Consequences of energy locality on atomistic calculations of defect mobility,” *Computational Materials Science Network Workshop on Microstructural Effects on the Mechanics of Materials*, Lawrence Berkeley National Laboratory, June 18-20, 2001.

Conference Fellowship, “Optimal particle controller for coupled continuum/MD fluid simulation,” *First MIT Conference on Computational Fluid and Solid Mechanics*, MIT, June 12-15, 2001.

Invited talk, “Nearly exact solution for coupled continuum/MD fluid simulation,” *NIST Workshop on Hybrid Computational Methods for Multiscale Modeling of Materials*, in Gaithersburg, Maryland, May 12-14, 1999.

Service

Co-director (with Bilge Yildiz), MIT Energy Initiative (MITEI) Low-Carbon Energy Center for Materials in Energy and Extreme Environments (CME), 2016-present.

Member of Editorial Board of *Modelling and Simulation in Materials Science and Engineering* (Feb. 2008-Jan. 2021), *Nano Research* (Mar. 2008-), *Science China: Technological Sciences* (Jan. 2013-), *Extreme Mechanics Letters* (Aug. 2014-), *Advanced Fiber Materials* (Dec. 2018-), *Engineering* (May 2020-), *Energy Material Advances* (Sept. 2020-), *Journal of Materiomics* (Jan. 2021-), *eScience* (March 2021-).

Chief Organizer of AASF 2nd annual meeting and Public Science Symposium **AI for Science and Medicine**, Nov. 12, 2023, MIT.

Lead Organizer of **virtual Symposium on Construction and Concrete Innovations (vCONcrete22)**, Jan. 25, 2022, MIT.

Lead Organizer of MIT A+B Applied Energy Symposium, **May 22-24, 2019**, with Dr. Zhenhua Rui and Prof. Jinyue Yan. **August 13-14, 2020** and August 11-13, 2021.

Lead Organizer of 2013 MRS Fall Meeting Symposium YY
“*Elastic Strain Engineering for Unprecedented Materials Properties*” (with Zhiwei Shan, Evan Ma and Oden L. Warren), Dec. 1-5, 2013, Boston.

Lead Guest Editor of *MRS Bulletin* February 2014 special issue on Elastic Strain Engineering (ESE)

Organizer of MRS Webinar on Elastic Strain Engineering on May 6, 2014.

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

MIT NSE Graduate Committee (1/2012-)

Faculty Advisor to Chinese Students and Scholars Association at Penn (CSSAP, 1/2009-6/2011)

Penn MSE Graduate Group Chair (7/1/2009-6/30/2011)

Penn MSE Colloquium Organizer (9/2008-6/2009)

Penn MSE Faculty Search Committee (9/2008-6/2009)

OSU MSE Faculty Meeting Secretary (9/2002-8/2005)

OSU MSE Library and Computing Committee (9/2004-8/2006, 4/2007-9/2007)

OSU MSE Graduate Studies Committee (1/2005-8/2006)

OSU MSE Faculty Search Committee (2/2006-1/2007)

OSU MSE Undergraduate Studies Committee (9/2006-9/2007)

OSE MSE Student Relations Committee (9/2006-4/2007)

OSE MSE Ad Hoc Committee on Undergraduate Curriculum Adjustments (9/2006-2/2007)

Ph.D. candidacy exam committee of: Eunha Lee (OSU MSE 2002), Sudhakar Mahajanam (OSU MSE 2003), James M. Nash (OSU MSE 2004), Mala Seth (OSU MSE 2004), Matthew C. Brandes (OSU MSE 2005), Jonathan P. Blank (OSU MSE 2005), Barbara N. Padgett (OSU MSE 2005), Liang Qi (OSU MSE 2005), Amy M. Hayes (Chemistry 2005), Michael Rauscher (OSU MSE 2005), Lanlin Zhang (OSU MSE 2006), Amit Samanta (OSU MSE 2006), Sungwoo Ahn (OSU Mathematics 2007), Weiqi Luo (OSU MSE 2007); Jae Hong Choi (Penn MSE, 2008)

Ph.D. thesis committee of: Yao Shen (OSU MSE 2004), Tao Liang (OSU MSE 2005), Shanhu Li (OSU MechE 2005), Libor Kovarik (OSU MSE 2006), Carmen M. Carney (OSU MSE 2006); XueLian Zhu (Penn MSE, 2010), Ivan Sergeevich

Baldychev (Penn CBE, 2011), Tingting Qi (Penn Chemistry, 2011), Miguel Angel Mendez Polanco (Penn Chemistry), Kevin Bakhmutsky (Penn CBE), John Mark Martirez (Penn Chemistry), Tevis Jacobs (Penn MEAM), Vicky Doan-Nguyen (Penn MSE), Matthew A. Caporizzo (Penn MSE), Rubal Dua (Penn CBE), Xi-anngnan Dang (MIT MSE, 2013)

Senior project advisor of: Jaumale L. Daniels (OSU MSE 2005), Danelle Violet (OSU MSE 2006), Joseph Lydon and Arthur Spector, “Building efficiency modeling and materials selection” (Penn MSE 2010).

Undergraduate Research Opportunities (REU) Program advisor of: Miten Mistry (Penn MSE, Jan 2009 -), Jonathan Rosen (Penn Nano-Bio Interface Center, June 2009 -)

American Chemical Society Project SEED High School Summer Research Experience: Manohjah Blackmanhe

Lead organizer of [AFOSR Workshop on Modeling Materials in Extreme Environment](#), Sept. 24-25, 2005, Washington D.C.

Panel member, [Basic Research Needs for Advanced Nuclear Energy Systems](#) (panel 6: Predictive Modeling and Simulation), July 31 - August 2, 2006, Washington, D.C., sponsored by the Office of Basic Energy Sciences, Department of Energy.

Panel member, [Advanced High-Strength Steels: Fundamental Research Issues](#) (panel A: Models versus Experiments), October 22-23, 2006, Washington, D.C., sponsored by the National Science Foundation, Department of Energy, and the Auto/Steel Partnership.

Member of DOE-BES Site Review Committee of the BES/Division of Materials Science & Engineering core program at Sandia National Laboratories, Albuquerque, March 22-25, 2010.

Member of Scientific Committee, Third International Conference of Heterogeneous Materials Mechanics (ICHMM 2011), ChongMing Island, China, May 22-26, 2011.

Co-organizer (with Zhiwei Shan, Xiaodong Li and Jun Sun), 4th International Workshop on Materials Behavior at Micro- and Nano-Scale, Xi’an, China, May 19-21, 2011.

Co-organizer (with Erik van der Giessen and Marc G.D. Geers) of symposium “Micromechanics” in MMM2010, the Fifth Conference on Multiscale Material Modelling, Freiburg, Germany, October 4-8, 2010.

Co-organizer (with Sulin Zhang, Gang Bao, Huajian Gao, K. Jimmy Hsia) of symposium “Molecular and Cellular Biomechanics: Adhesion, Cell-ECM Interaction,

and Mechanotransduction,” 16th US National Congress of Theoretical and Applied Mechanics (USNCTAM), Pennsylvania State University, State College, PA 16801, June 27 - July 2, 2010.

Co-organizer (with Zhiwei Shan, Jun Sun and Evan Ma), International Workshop on Materials Behavior at Micro- and Nano-Scale, Xi’an, China, June 8-11, 2010.

Co-organizer (with Zhiwei Shan, Xiaofeng Zhang, Oden L. Warren, Ming Pan, Shuo Chen, Kai Chen and Jun Sun), Workshop on In Situ Electron Microscopy in Advanced Materials Research, Xi’an, China, June 12-15, 2012.

Co-organizer (with Peter M. Derlet, Mike D. Uchic, Daniel Weygand, Eric Le Bourhis) of Symposium “GG: Plasticity in Confined Volumes - Modeling and Experiments”, MRS Fall Meeting, Boston, November 30 - December 4, 2009.

Organizer (with Wei Cai, Ting Zhu, Diana Farkas, Jacob Eapen, Krystyn J. Van Vliet) of symposium “1.1 Multiphysics Materials Modeling from Atoms to Continuum: A Symposium in Honor of Professor Sidney Yip”, tenth U.S. National Congress on Computational Mechanics (USNCCM X), July 16-19, 2009.

Local Organizing Committee, tenth U.S. National Congress on Computational Mechanics (USNCCM X), Columbus, Ohio, July 16-19, 2009.

Co-organizer (with George Lykotrafitis, Sulin Zhang, Greg Huber and Ming Dao) of symposium “Mechanics of Biomembranes”, 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, VA, June 24-27, 2009.

Co-organizer (with Shaofan Li and Sukky Jun) of symposium “Recent Developments in Nanoscale Simulations: From Quantum to Coarse-Grained Modeling”, ninth U.S. National Congress on Computational Mechanics (USNCCM IX), San Francisco, July 22-26, 2007.

Co-editor of *Mechanical Behavior at Small Scales - Experiments and Modeling*, Materials Research Society Symposium Proceedings volume 1224, eds. Jun Lou, Erica Lilleodden, Brad Boyce, Lei Lu, Peter M. Derlet, Daniel Weygand, Ju Li, Michael Uchic, and Eric Le Bourhis (Materials Research Society, Warrendale, Pennsylvania, 2010). Symposia FF/GG held on November 30 - December 3, 2009, Boston, USA. ISBN 978-1-60511-197-1.

Miscellaneous Listed in *Nanobiomechanics*, one of 10 Emerging Technologies in 2006 according to *Technology Review*.

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

Ab initio tight-binding analysis with quasiautomatic orbitals (with Xiaofeng Qian):
<http://li.mit.edu/Archive/QO/>

Issued Patents

8. October 4, 2022: US Patent 11462683, “CMOS-compatible protonic resistive devices,” Oguzhan Murat Onen, Jesus Del Alamo, Ju Li and Bilge Yildiz.
7. July 9, 2019: US Patent 10347911, “Lithium hydrogen titanate Li—H—Ti—O material and method for making the same,” Zi-Long Tang, Shi-Tong Wang, Zhong-Tai Zhang, Ju Li.
6. July 24, 2018: US Patent 10033034, “Sulfur nanosponge cathode for lithium-sulfur battery and methods of manufacture thereof,” Junjie Niu, Akihiro Kushima, Chao Wang, Ju Li.
5. May 29, 2018: US Patent 9985327, “Air secondary battery,” Tetsuya Koido, Akihiro Kushima, Yoshiya Fujiwara, Ju Li.
4. April 24, 2018: US Patent 9954262, “Air secondary battery including cathode having trap portion,” Tetsuya Koido, Akihiro Kushima, Yoshiya Fujiwara, Ju Li.
3. Nov. 7, 2017: US Patent 9808782, “Optoelectronic devices including twisted bilayers,” Ju Li, Xiaofeng Qian, Menghao Wu.
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.

Peer-Reviewed Papers¹

597. Z-C. Ren, Z. Zhang, Y-S. Tian and J. Li, “CRESt – Copilot for Real-world Experimental Scientist” chemrxiv-2023-tnz1x (2023).

ResearcherID: A-2993-2008
596. Y-C. Wang, X-D. Wang, J. Ding, B-M. Liang, L-L. Zuo, S-C. Zheng, L-C. Huang, W. Xu, C-W. Fan, Z-Q. Duan, C-D. Jia, R. Zheng, Z. Liu, W. Zhang, J. Li, E. Ma and Z-W. Shan, “Inward motion of diamond nanoparticles inside an iron crystal,” *Nature Communications* **15** (2024) 4659.
595. P. Zguns, N. Gedik, B. Yildiz and J. Li, “Superconductivity and Pronounced Electron-Phonon Coupling in Rock-Salt $\text{Al}_{1-x}\text{O}_1-x$ and $\text{Ti}_{1-x}\text{O}_{1-x}$,” *Advanced Electronic Materials* (2024) 2400141.

¹ResearcherID: 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.
Google Scholar: <http://scholar.google.com/citations?user=SHVhdhoAAAAJ>
AD Scientific Index: <https://www.adscientificindex.com/scientist/ju-li/1324670>

594. M.H. Mohamed, I. Elzeny, J. Samuel, Y-M. Huang, A.S. Helal, M. Galanek, W-Q. Xu, S.Y. Kim, T. Pham, L. Miller, A. Hogan, B. Space, J. Li and S.K. Elsaidi, “Trailblazing Kr/Xe Separation: The Birth of the First Kr-Selective Material,” *ACS Appl. Mater. Interfaces* **16** (2024) 29364-29373.
593. R-J. Yang, L. Mei, Z-Y. Lin, Y-Y. Fan, J-W. Lim, J-H. Guo, Y-J. Liu, H.S. Shin, D. Voiry, Q-Y. Lu, J. Li and Z-Y. Zeng, “Intercalation in 2D materials and in situ studies” *Nature Reviews Chemistry* **8** (2024) 410-432.
592. S.E. Jerng, Y.J. Park and J. Li, “Machine learning for CO₂ capture and conversion: A review” *Energy and AI* **26** (2024) 100361.
591. Y.J. Park, D. Kaplan, Z-C. Ren, C-W. Hsu, C-H. Li, H-W. Xu, S-P. Li and J. Li, “Can ChatGPT be used to generate scientific hypotheses?” *J. Materiomics* **10** (2024) 578-584.
590. C-H. Li, L-Y. Feng, Y.J. Park, J. Yang, J. Li and S-L. Zhang, “Machine learning traction force maps for contractile cell monolayers,” *Extreme Mechanics Letters* **68** (2024) 102150.
589. Z. Shi, E. Tsymbalov, W-C. Shi, A. Barr, Q-J. Li, J-X. Li, X-Q. Chen, M. Dao, S. Suresh and J. Li, “Phonon stability boundary and deep elastic strain engineering of lattice thermal conductivity,” *PNAS* **121** (2024) e2313840121.
588. H-W. Xu, U. Delic, G-Q. Wang, C-H. Li, P. Cappellaro and J. Li, “Exponentially Enhanced Non-Hermitian Cooling,” *Physical Review Letters* **132** (2024) 110402.
587. R.F.H. Hernandha, B. Umesh, J. Patra, C-J. Tseng, C-T. Hsieh, J. Li and J-K. Chang, “Double Nitrogenation Layer Formed Using Nitric Oxide for Enhancing Li⁺ Storage Performance, Cycling Stability, and Safety of Si Electrodes,” *Advanced Science* (2024) 2310062.
586. Y-S. Jung and J. Li, “Boron-10 stimulated helium production and accelerated radiation displacements for rapid development of fusion structural materials,” *J. Materiomics* **10** (2024) 377-385.
585. S.Y. Kim, S. Kavak, K.G. Bayrak, C. Sun, H-W. Xu, M.J. Lee, D. Chen, Y. Zhang, E. Tekoglu, D. Agaogullari, E. Ayas, E.S. Park and J. Li, “Demonstration of Helide formation for fusion structural materials as natural lattice sinks for helium,” *Acta Materialia* **266** (2024) 119654.
584. H. Tang, G-Q. Wang, P. Cappellaro and J. Li, “ μ eV-Deep Neutron Bound States in Nanocrystals,” *ACS Nano* (2024) 9063-9070.
583. A. Abdelhafiz, M.H. Mohammed, J. Abed, D-C. Lee, M-J. Chen, A.S. Helal, Z-C. Ren, F. Alamgir, E. Sargent, P.A. Kohl, S.K. Elsaidi and J. Li, “Tri-Metallic Catalyst for Oxygen Evolution Reaction Enables Continuous Operation of Anion Exchange Membrane Electrolyzer at 1A cm⁻² for Hundreds of Hours,” *Advanced Energy Materials* (2024) 2303350.
582. T. Defferriere, A.S. Helal, J. Li, J.L.M. Rupp and H.L. Tuller, “Ionic Conduction-Based Polycrystalline Oxide Gamma Ray Detection - Radiation-Ionic Effects,” *Advanced Materials* (2024) 2309253.

581. F. Gao, Z. Shi, J. Li and J. Glodo, “Thermalization of electron-hole pairs in LaBr₃, CeBr₃ and CLLB: Monte Carlo simulation,” *Physical Review Materials* **8** (2024) 025201.
580. K.B. Kim, M.S. Sohn, S. Min, J-W. Yoon, J-S. Park, J. Li, Y.K. Moon and Y.C. Kang, “Highly Selective and Reversible Detection of Simulated Breath Hydrogen Sulfide Using Fe-Doped CuO Hollow Spheres: Enhanced Surface Redox Reaction by Multi-Valent Catalysts,” *Small* (2024) 2308963.
579. Y. Zhang, Y-H. Dong and J. Li, “Electrochemical shock and transverse cracking in solid electrolytes,” *Acta Materialia* **265** (2024) 119620.
578. G-X. Liu, W. Wan, Q. Nie, C. Zhang, X-L. Chen, W-H. Lin, X-Z. Wei, Y-H. Huang, J. Li and C. Wang, “Controllable long-term lithium replenishment for enhancing energy density and cycle life of lithium-ion batteries,” *Energy & Environmental Science* **17** (2024) 1163-1174.
577. M. Schwacke, P. Zguns, J. del Alamo, J. Li and B. Yildiz, “Electrochemical Ionic Synapses with Mg²⁺ as the Working Ion,” *Advanced Electronic Materials* (2024) 2300577.
576. E. Tekoglu, A.D. O’Brien, J-S. Bae, K-H. Lim, J. Liu, S. Kavak, Y. Zhang, S.Y. Kim, D. Agaogullari, W. Chen, A.J. Hart, G-D. Sim and J. Li, “Metal matrix composite with superior ductility at 800 C: 3D printed In₇₁₈+ZrB₂ by laser powder bed fusion,” *Composites Part B* **268** (2024) 111052.
575. R-J. Yang, Y-Y. Fan, L. Mei, H.S. Shin, D. Voiry, Q-Y. Lu, J. Li and Z-Y. Zeng, “Synthesis of atomically thin sheets by the intercalation-based exfoliation of layered materials,” *Nature Synthesis* **2** (2023) 101-118.
574. Z. Zhang, D-W. Xi, Z-C. Ren and J. Li, “A carbon-efficient bicarbonate electrolyzer,” *Cell Reports Physical Science* **4** (2023) 101662.
573. S-H. Wang, G-X. Liu, W. Wan, X-Y. Li, J. Li and C. Wang, “Acetamide-Caprolactam Deep Eutectic Solvent-Based Electrolyte for Stable Zn-Metal Batteries,” *Advanced Materials* (2023) 2306546.
572. H. Tang, B-N. Li, Y-X. Song, M-R. Liu, H-W. Xu, G-Q. Wang, H-J. Chung and J. Li, “Reinforcement Learning-Guided Long-Timescale Simulation of Hydrogen Transport in Metals,” *Advanced Science* (2023) 2304122.
571. H-W. Xu, H. Tang, G-Q. Wang, C-H. Li, B-N. Li, P. Cappellaro and J. Li, “Solid-state ²²⁹Th nuclear laser with two-photon pumping,” *Physical Review A* **108** (2023) L021502.
570. G-Q. Wang, A.R. Barr, H. Tang, M. Chen, C-H. Li, H-W. Xu, A. Stasiuk, J. Li and P. Cappellaro, “Characterizing Temperature and Strain Variations with Qubit Ensembles for Their Robust Coherence Protection,” *Physical Review Letters* **131** (2023) 043602.
569. G-Q. Wang, C-H. Li, H. Tang, B-N. Li, F. Madonini, F.F. Alsallom, W.K.C. Sun, P. Peng, F. Villa, J. Li and P. Cappellaro, “Manipulating solid-state spin concentration through charge transport,” *PNAS* **120** (2023) e2305621120.

568. C. Wang, F-Z. Yang, W. Wan, S-H. Wang, Y-Y. Zhang, Y-H. Huang and J. Li, “A large-area lithium metal-carbon nanotube film for precise contact prelithiation in lithium-ion batteries,” *Energy & Environmental Science* **16** (2023) 4660-4669.
567. J-J. Shi, H-W. Xu, C. Heide, C-A. Huangfu, C-Y. Xia, F. de Quesada, H-Z. Shen, T-Y. Zhang, L. Yu, A. Johnson, F. Liu, E-Z. Shi, L-Y. Jiao, T. Heinz, S. Ghimire, J. Li, J. Kong, Y-F. Guo and A.M. Lindenberg, “Giant room-temperature nonlinearities in a monolayer Janus topological semiconductor,” *Nature Communications* **14** (2023) 4953.
566. Z-C. Ren, Z-K. Ren, Z. Zhang, T. Buonassisi and J. Li, “Autonomous experiments using active learning and AI,” *Nature Reviews Materials* **8** (2023) 563–564.
565. Y-H. Dong and J. Li, “Oxygen redox and instability in energy ceramics,” *Cell Reports Physical Science* **4** (2023) 101460.
564. Y. Yang, W-Y. Zhou, S. Yin, S.Y. Wang, Q. Yu, M.J. Olszta, Y-Q. Zhang, S.E. Zeltmann, M-D. Li, M-m. Jin, D.K. Schreiber, J. Ciston, M.C. Scott, J.R. Scully, R.O. Ritchie, M. Asta, J. Li, M.P. Short and A.M. Minor, “One dimensional wormhole corrosion in metals,” *Nature Communications* **14** (2023) 988.
563. Y. Xie, X-H. Lin, J. Li, Q. He and J-M. Huang, “Caught in the crossfire: Fears of Chinese-American scientists,” *PNAS* **120** (2023) e2216248120.
562. M-Y. Rao, H. Tang, J-B. Wu, W-H. Song, M. Zhang, W-B. Yin, Y. Zhuo, F. Kiani, B. Chen, X-Q. Jiang, H-F. Liu, H-Y. Chen, R. Midya, F. Ye, H. Jiang, Z-R. Wang, M-C. Wu, M. Hu, H. Wang, Q-F. Xia, N. Ge, J. Li and J.J. Yang, “Thousands of conductance levels in memristors integrated on CMOS,” *Nature* **615** (2023) 823.
561. B. Boztemur, M. Mansoor, F. Kaya, M-T. Huang, E. Tekoglu, M.L. Ovecoglu, J. Li and D. Agaogullan, “NdB6 ceramic nanoparticles: First principles calculations, mechanochemical synthesis and strain engineering,” *Journal of Materials Research and Technology* **24** (2023) 5571-5587.
560. D-G. Xie, R-R. Zhang, X-H. Dai, Z-Y. Nie, X-Y. Wang, E. Ma, J. Li and Z-W. Shan, “Long-distance interface diffusion induced non-volume-conserved deformation in self-supported submicron-sized aluminum pillars,” *Acta Materialia* **255** (2023) 119092.
559. C. Li, Y-X. Chen, J. Patra, S-X. Lu, C-T. Hsieh, C-C. Yang, Q-F. Dong, J. Li and J-K. Chang, “Self-Discharge Behavior of Graphitic Cathodes for Rechargeable Aluminum Batteries,” *Adv. Funct. Mater.* (2023) 2305511.
558. C.Y. Regalado Vera, H-P. Ding, J. Urban-Klaehn, M. Li, Z-Y. Zhao, F. Stewart, H-C. Tian, X-B. Liu, Y-H. Dong, J. Li, M. Zhou, H-M. Luo and D. Ding, “Improving Proton Conductivity by Navigating Proton Trapping in High Scandium-Doped Barium Zirconate Electrolytes,” *Chemistry of Materials* **35** (2023) 5341-5352.
557. M-K. Song, J-H. Kang, X-Y. Zhang, W-J. Ji, A. Ascoli, I. Messaris, A.S. Demirkol, B-W. Dong, S. Aggarwal, W-E. Wan, S-M. Hong, S.G. Cardwell, I. Boybat, J-S. Seo, J-S. Lee,

- M. Lanza, H-W. Yeon, M. Onen, J. Li, B. Yildiz, J.A. del Alamo, S-Y. Kim, S-H. Choi, G. Milano, C. Ricciardi, L. Alff, Y. Chai, Z-R. Wang, H. Bhaskaran, M.C. Hersam, D. Strukov, H.-S.P. Wong, I. Valov, B. Gao, H-Q. Wu, R. Tetzlaff, A. Sebastian, W. Lu, L. Chua, J.J. Yang, And J-H. Kim, “Recent Advances and Future Prospects for Memristive Materials, Devices, and Systems,” *ACS Nano* **17** (2023) 11994-12039.
556. H-B. Yang, B-M. Wang, H. Zhang, B. Shen, Y-Y. Li, M. Wang, J-J. Wang, W-S. Gao, Y-M. Kang, L. Li, Y-H. Dong, J-G. Li and J. Li, “Evolving corundum nanoparticles at room temperature,” *Acta Materialia* **255** (2023) 119038.
555. H. Tang, B-N. Li, G-Q. Wang, H-W. Xu, C-H. Li, A. Barr, P. Cappellaro and J. Li, “Communication-Efficient Quantum Algorithm for Distributed Machine Learning,” *Phys. Rev. Lett.* **130** (2023) 150602.
554. Y-S. Niu, Z-L. Hu, B. Zhang, D-D. Xiao, H-C. Mao, L. Zhou, F-X. Ding, Y. Liu, Y. Yang, J-P. Xu, W. Yin, N. Zhang, Z-W. Li, X-Q. Yu, H. Hu, Y-X. Lu, X-H. Rong, J. Li and Y-S. Hu, “Earth-Abundant Na-Mg-Fe-Mn-O Cathode with Reversible Hybrid Anionic and Cationic Redox,” *Advanced Energy Materials* (2023) 2300746.
553. Q-J. Li, M.N. Cinbiz, Y. Zhang, Q. He, G. Beausoleil and J. Li, “Robust deep learning framework for constitutive relations modeling,” *Acta Materialia* **254** (2023) 118959.
552. S. Takamoto, D. Okanohara, Q-J. Li and J. Li, “Towards universal neural network inter-atomic potential,” *Journal of Materiomics* **9** (2023) 447-454.
551. J-D. Yu, J. Li, S. Zhang, F. Wei, Y-J. Liu and J-H. Li, “Mechanochemical upcycling of spent LiCoO₂ to new LiNi_{0.80}Co_{0.15}Al_{0.05}O₂ battery: An atom economy strategy,” *PNAS* **118** (2023) e2217698120.
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