

Haimei Zheng

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Appointments

- 2018- Senior Scientist, Materials Sciences Division, Lawrence Berkeley National Laboratory (LBNL) Berkeley, CA.
2013- Adjunct Professor (from Adj. Asst. to Assoc. & Full), Department of Materials Science & Engineering, UC Berkeley, CA.
2010-2017 Scientist, Materials Sciences Division, LBNL, Berkeley, CA.

Education & Training

Postdoc	LBNL & UC Berkeley	Electron Microscopy, & Chemistry	2006-2010
Postdoc	UC Berkeley	Materials Sci. Eng., & Physics	2005-2006
Ph.D.	University of Maryland, College Park	Materials Sci. Eng.	2004
M.S.	Tianjin University	Materials Sci. Eng.	1997

Honors & Awards

- 2023 Microscopy Society of America Fellow
2021 Materials Research Society Fellow
2019 Materials Research Society Medal Award
2013 LBNL Director's Award for Exceptional Scientific Achievement
2011 DOE Office of Science Early Career Award
2003 Materials Research Society Graduate Student Gold Medal Award

Professional Membership

Materials Research Society, Microscopy Society of America, American Chemical Society

Synergistic Activity & Service

Editorial Service

- Associate Editor, *Frontiers in Chemistry* (Catalytic Reactions and Chemistry section) 2023-present.
- Member of the Editorial Board, *Scientific Report*, 2018-present.
- Member of the Editorial Advisory Board, *Chem*, 2016-present.
- Guest Editor, *Cell Press* special collection "Advances and applications of liquid-phase transmission electron microscopy" 2024.
- Guest Editor, *Applied Physics Reviews* special issue "Frontiers in energy materials research: novel measurement, modeling and processing approaches" 2024.
- Guest Editor, *MRS Bulletin* special issue "Liquid phase electron microscopy" 2020.
- Guest Editor, *Accounts of Chemical Research* special issue "Direct visualization of chemical and self-assembly processes with transmission electron microscopy" 2017.
- Guest Editor, *MRS Bulletin* special issue "Frontiers of in situ electron microscopy" 2015.

Conference Organization

- Chair, GRC "Liquid Phase Electron Microscopy", Vice Chair 2024, Chair 2026.
- Organizer, Symposium on "Organic chemistry: applications of liquid phase electron microscopy and other advanced electron microscopy methods" in Physical Science Division, 20th International Microscopy Congress (IMC20), Busan, Korea, September 9-15, 2023.
- Chair, MRS Fall Meeting, 2022.
- Organizer, Symposium on "Direct visualization of chemical and self-assembly processes with high-resolution microscopy" at the International Chemical Congress of Pacific Basin Societies (Pacifichem), Honolulu, Hawaii, December 15-20, 2021.

- Organizer, Symposium on “In situ TEM characterization of dynamic processes during materials synthesis and processing” at Microscopy & Microanalysis, Portland, Oregon, August 4-8, 2019.
- Organizer, Symposium on “In situ and operando microscopy of electronic and energy materials” at XXVII International Materials Research Congress, Cancun, Mexico, August 19-24, 2018.
- Organizer, Symposium on “In situ electron microscopy of dynamic materials and phenomena” at MRS Spring Meeting & Exhibit, Phoenix, Arizona, April 17-21, 2017.
- Organizer, Symposium on “In situ microscopy” at Microscopy & Microanalysis, Hartford, Connecticut, August 3-7, 2014.
- Co-organizer and Co-chair, DOE Office of Science Workshop on “Future Electron Scattering & Diffraction”, Rockville, Maryland, February 25-26, 2014.

Reviewer

Accounts of Chemical Research, ACS Applied Materials & Interfaces, ACS Catalysis, ACS Nano, Analytical Chemistry, Annual Review of Physical Chemistry, Applied Physics Letters, Chem, Chemical Communications, Journal of Materials Chemistry, Journal of Physical Chemistry, JACS, Matter, Microscopy and Microanalysis, Nano Letters, Nanoscale, Nature, Nature Catalysis, Nature Communications, Nature Energy, Nature Materials, Nature Nanotechnology, Science, Science Advances, Scientific Reports, Ultramicroscopy, and others.

Highlighted Publications (from total **167** publications; *corresponding author for all selected)

1. Q. Zhang, Z. Song, X. Sun, Y. Liu, J. Wan, S. B. Betzler, Q. Zheng, J. Shangguan, K. C. Bustillo, P. Ercius, P. Narang, Y. Huang, H. Zheng*, “Atomic dynamics of electrified solid-liquid interfaces in liquid cell TEM”, DOI: 10.21203/rs.3.rs-3266358/v1 (2024).
2. W. Zheng, D. Lee, H. Zheng*, “Strategies to overcome electron beam issues in liquid phase TEM study of chemical processes” *MRS Bulletin* doi:10.1557/s43577-024-00661-5 (2024).
3. Y. Xie, J. Wang, B. H. Savitzky, Z. Chen, Y. Wang, S. Betzler, K. C. Bustillo, K. Persson, Y. Cui, L. Wang, C. Ophus, P. Ercuis, H. Zheng*, “Spatially resolved structural order in low temperature liquid electrolyte.” *Science Advances* 9, eadc9721 (2023).
4. X. Peng, F. Zhu, Y. Jiang, J. Sun, L. Xiao, S. Zhou, K. C. Bustillo, L. Lin, J. Cheng, J. Li, H. Liao, S. Sun, H. Zheng*, “Identification of a quasi-liquid phase at solid-liquid interface.” *Nature Communications* 13, 3601 (2022).
5. W. Wang, Tao Xu, J. Chen, J. Shangguan, H. Dong, H. Ma, Q. Zhang, J. Yang, T. Bai, Z. Guo, H. Fang*, H. Zheng*, L. Sun*, “Solid-liquid-gas reaction accelerated by gas molecule tunneling-like effect.” *Nature Materials* 21, 859–863 (2022).
6. Q. Zhang, X. Peng, Y. Nie, Q. Zheng, J. Shangguan, Chao Zhu, K. C. Bustillo, P. Ercius, L. Wang, D. T. Limmer, H. Zheng*, “Defect-mediated ripening of core-shell nanostructures.” *Nature Communications* 13, 2211 (2022).
7. S. Lee, J. Shangguan, J. Alvarado, S. Betzler, S. J Harris, M. M Doeff, H. Zheng*, “Unveiling the mechanisms of lithium dendrite suppression by cationic polymer film induced solid electrolyte interphase modification.” *Energy & Environmental Science* 13, 1832-1842 (2020).
8. J. Yang, Z. Zeng, J. Kang, C. Czarnik, X. Zhang, C. Ophus, C. Yu, K. Bustillo, M. Pan, J. Qiu, L. W. Wang, H. Zheng*, “Formation of two-dimensional transition metal oxide nanosheets with nanoparticles as intermediates.” *Nature Materials* 18, 970-976 (2019).
9. C. Zhu, S. Liang, E. Song, Y. Zhou, W. Wang, F. Shan, Y. Shi, C. Hao, K. Yin, T. Zhang, J. Liu, H. Zheng*, L. Sun*, “In-situ liquid cell transmission electron microscopy investigation on oriented attachment of gold nanoparticles.” *Nature Communications* 9, 421 (2018).

10. K. Niu, Y. Xu, H. Wang, R. Ye, H. L. Xin, F. Lin, C. Tian, Y. Lum, K. C. Bustillo, M. M. Doeff, M. T. M. Koper, J. Ager, R. Xu, H. Zheng^{*}, "A spongy nickel-organic CO₂ reduction photocatalyst for nearly 100% selective CO production." *Science Advances* 3, e1700921 (2017).
11. H. G. Liao, D. Zherebetsky, H. Xin, C. Czarnik, P. Ercius, H. Elmlund, M. Pan, L. W. Wang, H. Zheng^{*}, "Facet development during platinum nanocube growth." *Science* 345, 916-919 (2014).
12. Z. Zeng, W. Liang, H. G. Liao, H. L. Xin, Y. H. Chu, H. Zheng^{*}, "Visualization of electrode-electrolyte interfaces in LiPF₆/EC/DEC electrolyte for lithium ion batteries via in-situ TEM." *Nano Letters* 14, 1745-1750 (2014).
13. H. G. Liao, L. Cui, S. Whitelam, H. Zheng^{*}, "Real time imaging Pt₃Fe nanorod growth in solution." *Science* 336, 1011-1014 (2012).
14. H. Zheng^{*}, J. B. Rivest, T. Miller, B. Sadtler, A. Lindenberg, M. F Toney, L. W. Wang, C. Kisielowski, A. P. Alivisatos^{*}, "Observation of transient structural-transformation dynamics in a Cu₂S nanorod." *Science* 333, 206-209 (2011).
15. H. Zheng, R. K. Smith, Y. W. Jun, C. Kisielowski, U. Dahmen^{*}, A. P. Alivisatos^{*}, "Observation of single colloidal platinum nanocrystal growth trajectories." *Science* 324, 1309-1312 (2009).

Research Advisement

Group members: postdocs; Ph.D. students; undergraduate students

Teaching

2024 Spring *Group Studies (Scanning Electron Microscopy)* MSE298, UC Berkeley

2024 Spring *Individual Study & Research* MSE299, UC Berkeley

2022 Spring *Nanomaterials for Scientists and Engineers* MATSCI140, UC Berkeley (1 semester; 90-minute lecture, 2 times per week)

2020 Spring *Nanomaterials for Scientists and Engineers* MATSCI140, UC Berkeley (1 semester; 90-minute lecture, 2 times per week)

2018 Spring *Electron Microscopy and Microanalysis* MSE241, UC Berkeley (1 semester; 1 50-minute lecture & 4 lab hours per week)

2016 Spring *Electron Microscopy and Microanalysis* MSE241, UC Berkeley (1 semester; 1 50-minute lecture & 4 lab hours per week)

2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016, 2015 MSE298 & MSE299, UC Berkeley

Book Chapters

1. H. Liao, K. Niu, H. Zheng, "Nanostructure growth, interactions and assembly in the liquid phase" in *Liquid Cell Electron Microscopy*, F. Ross Ed., Cambridge University Press, 2016.
2. V. Nagarajan, T. Zhao, H. Zheng, R. Ramesh, "Nanoscale phenomena in ferroelectric thin films" in *Thin Films and Heterostructures for Oxide Electronics*, S. B. Ogale Ed., Springer, 2005.

Invited Talks (140+)

Full Publication List (<https://haimeizheng.lbl.gov/publications/>)