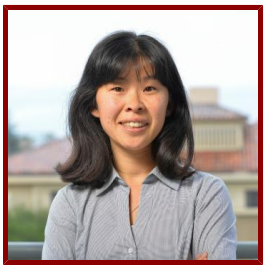
Stanford



Wendy Gu

Associate Professor of Mechanical Engineering and, by courtesy, of Materials Science and Engineering

Bio

BIO

The Gu Group studies the mechanical behavior and advanced fabrication of metals and ceramics. Current areas of research include the mechanics of solid-state battery materials, soft magnetic alloys and composites, and structural alloys in extreme environments.

ACADEMIC APPOINTMENTS

- Associate Professor, Mechanical Engineering
- Associate Professor (By courtesy), Materials Science and Engineering
- Member, Bio-X

HONORS AND AWARDS

- ARO Young Investigator Program Award, Army Research Office (2020)
- DOE Early Career Award, Department of Energy (2020)
- Doctoral New Investigator Award, ACS Petroleum Research Fund (2020)
- Hellman Fellow, Hellman Foundation (2019)
- Terman Faculty Fellow, Stanford Engineering (2017)
- National Defense Science and Engineering Graduate Fellowship, DoD (2011)
- Fulbright Award, Fulbright (2009)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Symposium organizer, Society of Engineering Sciences (2018 - present)
- Member, Metals, Minerals and Materials Society (2017 - present)
- Member, Materials Research Society (2017 - present)

PROFESSIONAL EDUCATION

- BS, University of California, Berkeley (2009)
- MS/PhD, California Institute of Technology (2014)

PATENTS

- Mehrdad T. Kiani, X. Wendy Gu. "United States Patent 62/914089 Solution processed metallic nano-glass films", Leland Stanford Junior University,, Oct 11, 0019

LINKS

- My Lab Site: gulab.stanford.edu
- Google Scholar: https://scholar.google.com/citations?user=EZ3_dV8AAAAJ&hl=en

Teaching

COURSES

2026-27

- Mechanical Measurements: ME 149 (Spr)
- Mechanics - Elasticity and Inelasticity: ME 340 (Win)

2025-26

- Introduction to Solid Mechanics: OSPHONGK 85 (Aut)
- Mechanical Measurements: ME 149 (Spr)

2024-25

- Mechanical Measurements: ME 149 (Spr)
- Mechanics - Elasticity and Inelasticity: ME 340 (Win)

2023-24

- Intro to Solid Mechanics: ENGR 14 (Win)
- Mechanical Measurements: ME 149 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Nick Montes, Zane Taylor

Postdoctoral Faculty Sponsor

Adeline Wihardja

Doctoral Dissertation Advisor (AC)

Adam Barsotti, Sammi Cheung, Luis Delfin Manriquez, Daniel Delghandi, Alice Kutsyy, Samuel Lee, Madison Morrison

Doctoral Dissertation Co-Advisor (AC)

Joshua Cheung, Sydney Richardson

Master's Program Advisor

Chloe Cholet, Aleida Escobar, Katelyn Kramer, Bea Lim, Richard Yuan, Alan Zhao, Junyu Zhou

Postdoctoral Research Mentor

Cole Fincher

Doctoral (Program)

Michael Kim, Michael Larson, Sophia Sonnert

Publications

PUBLICATIONS

- **Dendrite initiation and deflection in biaxially stressed solid electrolytes.** *Nature*

Cui, T., Wang, S., Lee, S. S., Barks, E., Cattermull, J., Melamed, C., Jiang, Z., Morrison, M., Narun, L., Tzeng, Y. K., Fujii, N., Kim, S. H., Xu, et al
2026

- **Mechanical and Optical Properties of Nanocluster-Silica Metamaterials.** *Advanced materials (Deerfield Beach, Fla.)*
  Cheung, S., Delghandi, D., Wu, C., Peng, Y. H., Martin, P., Gu, X. W.
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- **Heterogeneous doping via nanoscale coating impacts the mechanics of Li intrusion in brittle solid electrolytes.** *Nature materials*
  Xu, X., Cui, T., McConohy, G., Jagad, H. D., Lee, S. S., Wang, S., Melamed, C., Yang, Y., Barks, E., Kaeli, E., Narun, L., Cui, Y., Zhang, et al
  2026
- **3D cellular scaffolds reveal a hidden sensitivity to fluid-solid coupling.** *Biophysical journal*
  Cheung, S., Gu, X. W.
  2025
- **Unravelling electro-chemo-mechanical interplay in layered oxide cathode degradation in solid-state batteries.** *Science advances*
  Zheng, X., Xue, Z., Hao, H., Cho, Y., Li, Y., Kim, C., Czaja, P., Lee, S. S., Bone, S., Spielman-Sun, E., Jiang, Z., Gu, X. W., Weker, et al
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- **Upconverting microgauges reveal intraluminal force dynamics in vivo.** *ArXiv*
  Casar, J. R., McLellan, C. A., Shi, C., Stiber, A., Lay, A., Siefe, C., Parakh, A., Gaerlan, M., Gu, W., Goodman, M. B., Dionne, J. A.
  2025
- **Upconverting microgauges reveal intraluminal force dynamicsin vivo.** *ArXiv*
  Casar, J. R., McLellan, C. A., Shi, C., Stiber, A., Lay, A., Siefe, C., Parakh, A., Gaerlan, M., Gu, W., Goodman, M. B., Dionne, J. A.
  2025
- **Mechanical Behavior of Nanocluster-Based Nanocomposites Made Using Two-Photon Lithography.** *ACS applied materials & interfaces*
  Kulikowski, J., Delghandi, D., Wu, C., Figueroa, S. D., Cunningham, W. S., Gianola, D. S., Portela, C. M., Gu, X. W.
  2025
- **Characterization of 3D printed micro-blades for cutting tissue-embedding material.** *Extreme Mechanics Letters*
  Koppaka, S., Doan, D., Cai, W., Gu, W., Tang, S. K.
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- **Nanotwinned alloys under high pressure** *ACTA MATERIALIA*
  Wang, M. M., Dang, R., Parakh, A., Lee, A. C., Li, Z., Chariton, S., Prakapenka, V. B., Kang, J., Zhang, Y., Hodge, A. M., Gao, H., Gu, W.
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- **Triply periodic minimal surfaces for thermo-mechanical protection.** *Scientific reports*
  Cheung, S., Kang, J., Lin, Y., Goodson, K. E., Asheghi, M., Gu, X. W.
  2025; 15 (1): 1688
- **Upconverting microgauges reveal intraluminal force dynamics in vivo.** *Nature*
  Casar, J. R., McLellan, C. A., Shi, C., Stiber, A., Lay, A., Siefe, C., Parakh, A., Gaerlan, M., Gu, X. W., Goodman, M. B., Dionne, J. A.
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  Tertuliano, O. A., DePond, P. J., Lee, A. C., Hong, J., Doan, D., Capaldi, L., Brongersma, M., Gu, X. W., Matthews, M. J., Cai, W., Lew, A. J.
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- **Direct observation of phase transitions in truncated tetrahedral microparticles under quasi-2D confinement.** *Nature communications*
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- **Synthesis of multifunctional amorphous metallic shell on crystalline metallic nanoparticles.** *RSC advances*
  Parakh, A., Kiani, M. T., Lindgren, E., Colmenares, A., Lee, A. C., Suzuki, Y., Gu, X. W.
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- **Size-Induced Ferroelectricity in Antiferroelectric Oxide Membranes.** *Advanced materials (Deerfield Beach, Fla.)*

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- **Direct Observation of the Pressure-Induced Structural Variation in Gold Nanoclusters and the Correlated Optical Response.** *Nano letters*
  Li, Q., Zeman, C. J., Kalkan, B., Kirschbaum, K., Gianopoulos, C. G., Parakh, A., Doan, D., Lee, A. C., Kulikowski, J., Schatz, G. C., Shen, G., Kunz, M., Gu, et al
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- **Mechanical nanolattices printed using nanocluster-based photoresists.** *Science (New York, N.Y.)*
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- **Extraordinary Strain Hardening from Dislocation Loops in Defect-Free Al Nanocubes.** *Nano letters*
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- **Nanoparticle-enhanced absorptivity of copper during laser powder bed fusion** *ADDITIVE MANUFACTURING*
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  Liu, C., Nagler, O., Tremmel, F., Unterreitmeier, M., Frick, J. J., Patil, R. P., Gu, X., Senesky, D. G.
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- **Engineering Bright and Mechanosensitive Alkaline-Earth Rare-Earth Upconverting Nanoparticles.** *The journal of physical chemistry letters*
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  Park, G., Yoon, D., Kim, U., Namkoong, B., Lee, J., Wang, M. M., Lee, A. C., Gu, X., Chueh, W. C., Yoon, C. S., Sun, Y.
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- **Effect of strain rate on the deformation of hollow CoS nanoboxes and doubly porous self-assembled films** *EXTREME MECHANICS LETTERS*
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- **In Situ TEM Study of Radiation Resistance of Metallic Glass-Metal Core-Shell Nanocubes.** *ACS applied materials & interfaces*
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  2020
- **Ductile Metallic Glass Nanoparticles via Colloidal Synthesis.** *Nano letters*
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- **Hardening in Au-Ag nanoboxes from stacking fault-dislocation interactions.** *Nature communications*
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- **Structural distortion and electron redistribution in dual-emitting gold nanoclusters.** *Nature communications*
  Li, Q., Zhou, D., Chai, J., So, W. Y., Cai, T., Li, M., Peteanu, L. A., Chen, O., Cotlet, M., Wendy Gu, X., Zhu, H., Jin, R.
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- **Deformation of a nanocube with a single incoherent precipitate: role of precipitate size and dislocation looping** *PHILOSOPHICAL MAGAZINE*
  Kiani, M. T., Murayama, M., Gu, X.
  2020
- **Stress-Induced Structural Transformations in Au Nanocrystals.** *Nano letters*
  Parakh, A. n., Lee, S. n., Kiani, M. T., Doan, D. n., Kunz, M. n., Doran, A. n., Ryu, S. n., Gu, X. W.
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- **Packing State Management to Realize Dense and Semiconducting Lead Sulfide Nanocrystals Film via a Single-Step Deposition** *Packing State Management to Realize Dense and Semiconducting Lead Sulfide Nanocrystals Film via a Single-Step Deposition*
  Lu, K., Meng, X., Liu, Z., Chen, J., Wang, Y., Zhang, Y., Zhang, X., Sarnello, E., Shi, G., Patil, R. P., Deng, W., Zhou, S., Gu, et al
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  Li, Q. n., Mosquera, M. A., Jones, L. O., Parakh, A. n., Chai, J. n., Jin, R. n., Schatz, G. C., Gu, X. W.
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  Parakh, A. n., Lee, S. n., Harkins, K. A., Kiani, M. T., Doan, D. n., Kunz, M. n., Doran, A. n., Hanson, L. A., Ryu, S. n., Gu, X. W.
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  Gu, X. W., Greer, J. R.
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Wang, R. Y., Feser, J. P., Gu, X., Yau, K. M., Segalman, R. A., Majumdar, A., Milliron, D. J., Urban, J. J.
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