Jennifer A. Dionne

Stanford Professor of Materials Science and Engineering and of Radiology
Chan Zuckerberg Biohub Investigator
Deputy Director, DOE Q-NEXT National Quantum Initiative

EDUCATION AND TRAINING

Washington University in St. Louis	Physics	B.S.	2003
Washington University in St. Louis	Systems Science & Mathematics	B.S.	2003
California Institute of Technology	Applied Physics	M.S.	2005
California Institute of Technology	Applied Physics (Prof. Harry Atwater)	Ph.D.	2009
Univ. California, Berkeley	Chemistry (Prof. Paul Alivisatos)	Postdoc	2010

PROFESSIONAL APPOINTMENTS

Full Professor	Stanford University	2024—present
Senior Associate Vice Provost	Stanford University	2020—2024
Senior Fellow, Precourt Institute	Stanford University	2021— present
Deputy Director	DOE Q-NEXT National Quantum Initiative	2023—present
Associate Editor	Nano Letters	2020—present
Assistant Professor	Stanford University	2010—2016
Associate Professor	Stanford University	2016—2024

SELECT HONORS AND AWARDS

Blavatnik National Finalist, 2023
Chan Zuckerberg Biohub Investigator, 2022
Caltech Moore Visiting Faculty Fellow, 2022
Optica/OSA Fellow, 2020
NSF Alan T. Waterman Award, 2019
NIH New Innovator Award, 2019
Moore Inventor Fellow, 2017
Materials Research Society Outstanding Young Investigator, 2017
Nano Letters Young Investigator Lectureship, 2017
Tau Beta Pi Outstanding Undergraduate Engineering Professor, Stanford, 2016
Nano Letters Lectureship, 2016
Adolph Lomb Medal, Optical Society of America, 2016
Camille Dreyfus Teacher-Scholar Award, 2015
Sloan Research Fellowship, 2015
Presidential Early Career Award in Science and Engineering, 2014
Inaugural Kavli Early Career Lectureship in Nanoscience, MRS, 2013
Moore Foundation Fellowship, 2013
Oprah's 50 things that will make you say 'Wow!', 2013
National Science Foundation CAREER Award, 2012
Outstanding Young Alumni Award, Washington University in St. Louis, 2012
MIT Technology Review's TR35, 2011
Hellman Faculty Scholar, 2011
Air Force Office of Scientific Research Young Investigator Program Award, 2010
Frederick E. Terman Fellow, Stanford University, 2010
The Milton and Francis Clauser Doctoral Prize for best Caltech Thesis, 2009

SCIENTIFIC LEADERSHIP

Professional Activities

- DOE National QIS Applications Roadmapping Committee, 2024 – present
- Q-Next Deputy Director, 2023 – present
- Q-Next Center Thrust Lead, "Extreme Scale Characterization," 2020 – present
- NIH Nanotechnology Study Section (Nano), standing member, 2022-present
- Director, Photonics at Thermodynamic Limits, Energy Frontier Research Center, 2018 – present
- Associate Editor, Nano Letters
- Editorial Board Member, ACS Photonics
- Elected Chair, Plasmonics and Nanophotonics Gordon Conferences, 2018 (vice-Chair) & 2022 (Chair)
- Chair/Co-Chair, Materials Research Society Symposia: Recent examples include:
  Fall 2021: Transformative Nanostructures with Therapeutic and Diagnostic Modalities;
  Fall 2020: New Frontiers in the Design, Fabrication and Application of Metamaterials;
  Fall 2020: In Situ Methodologies for Observation of Energy Conversion and Transport
- Co-organized Planet Earth Arts New Play Festival and Art Residency at Stanford, 2015-2020
- Advisory Board Member
  Electrical & Systems Engineering, Washington University, 2012 - 2015 and 2020 to present
  Mechanical Engineering and Materials Science, Washington University, 2012 to present
  Lawrence Berkeley National Lab Molecular Foundry, 2012 to 2014

University and Departmental Service

- Chair, Faculty Search Committee 2022-2023: Successfully recruited two candidates for Electron Microscopy Search
- Chair, Committee on Research, which oversees research administration at Stanford (2019-present)
- Senior Fellow, Precourt Institute for Energy, Stanford University, 2021 - present
- Faculty Director, Stanford Photonics Research Center, 2018 - present
- Director, TomKat Center for Sustainable Energy, 2018 – 2020
- Undergraduate Advising and Research (UAR) Committee, 2015 – present
- Instructor, Stanford Summer Engineering Academy, 2015
- Affiliate Faculty, Bio-X, 2015 - present
- Affiliate Faculty, Stanford Neurosciences Institute, 2015 – present
- Member, Laser Committee, 2013 – present
- Member, Faculty Search Committees
  Materials Science and Engineering, 2013
  Electrical Engineering, 2013
- Instructor, Stanford Youth Medical Scholar Program, 2012 to present
- Affiliate Faculty, Precourt Institute for Energy, Stanford University, 2012 - 2021
- Pre-major advisor for freshman and sophomores, 2010 to 2018

SELECT PEER-REVIEWED PUBLICATIONS

1. J. Casar, C. Shi, M. Goodman, J. Dionne, "Upconverting microgauges reveal intraluminal force dynamics in vivo," in revisions Nature (2024)
2. V. Dolia, H. Balch, S. Dagli, S. Abdollahramezani, H. Carr Delgado, P. Moradifar, K. Chang, A. Stiber, F. Safir, M. Lawrence, J. Hu, J. Dionne, Very-large-scale Integrated High-Q Nanoantenna Pixels (VINPix), ArXiv: 2310.08065; in revisions, Nature Nanotechnology (2024)

3. B. Ogunlade, L. F. Tadesse, H. Li, N. Vu, N. Banaei, A. K. Barczak, A. Saleh, M. Prakash, J. Dionne, “Predicting Tuberculosis Drug Resistance with Machine Learning-Assisted Raman Spectroscopy,”, arXiv:2306.05653; in revisions, PNAS (2024)
4. D. Angell, S. Li, H. Utzat, M. Thurston, Y. Liu, J. Dahl, R. Carlson, Z-X Shen, R. Sinclair, N. Melosh, J. Dionne, Nanodiamond grain boundaries and lattice expansion drive Silicon vacancy emission heterogeneity, arXiv:2202.07879 (2024); accepted PNAS (2024)
5. J. Shi, Y. Shen, F. Pan, W. Sun, A. Mangu, C. Shi, A. Mckeown-Green, P. Moradifar, M. G. Bawendi, W. E. Moerner, J. Dionne, F. Liu, A. M. Lindenberg, Solution-Phase Single-Particle Spectroscopy for Probing Multi-Polaronic Dynamics in Quantum Emitters at Femtosecond Resolution, arXiv 2304.00735; accepted, Nature Materials (2024)
6. P. Moradifar, Y. Liu, J. Shi, M. Thurston, H. Utzat, T. v.Driel, A. Lindenberg, J. Dionne, Accelerating quantum materials development with advances in transmission electron microscopy, ArXiV 2212.10099, accepted, Chemical Reviews (2023)
7. D. McCoy, D. Burns, E. Klopfer, L. Herndon, B. Ogunlade, J. Dionne, S. Johnsen, Heart cockle shells transmit sunlight for photosynthesis using bundled fiber optic cables and condensing lenses, BioRXiv, https://doi.org/10.1101/2022.10.28.514291, in revisions, Nature Communications (2024)
8. J. Hu, F. Safir, J. Abendroth, J. Dixon, B. Pinsky, S. Jeffrey, M. Lawrence, J. Dionne, Rapid genetic screening with high quality factor metasurfaces, Nature Communications Vol. 14 No. 4486, 2023
9. N. Gross, W. Wang, S. Brasel, E. K. Searles, B. Bourgeois, J. Dionne, C. F. Landes, S. Link, “High-Throughput Screening of Optical Properties of Glass-Supported Plasmonic Nanoparticles Fabricated by Polymer Pen Lithography,” J. Phys. Chem. C., Vol. 127, No. 39, pp 19607-19619, 2023
10. D. E. McCoy, A. J. Shultz, J. E. Dall, J. Dionne, S. Johnsen, “The Carotenoid Redshift: Physical Basis and Implications for Visual Signaling,” Ecology and Evolution, Vol. 13, No. 9, pp e10408, 2023
11. B. Bourgeois, C. Carlin, D. Angell, D. Swearer, W. H. Cheng, A. Dai, L. Yuan, J. Dionne, “Linking Atomic and Reactor Scale Plasmon Photocatalysis in Acetylene Hydrogenation with Optically Coupled ETEM,” Microscopy and Microanalysis, Vol. 29, No. Supplement 1, pp 1298-1299, 2023
12. N. Gross, C. Kuhs, B. Ostovar, W.Y. Chiang, K. S. Wilson, T. S. Volek, Z. M. Faitz, C. C. Carlin, J. Dionne, M. T. Zanni, M. Gruebele, S. T. Roberts, S. Link, C. F. Landes, “Progress and Prospects in Optical Ultrafast Microscopy in the Visible Spectral Region: Transient Absorption and Two-Dimensional Microscopy,” J. Phys. Chem. C., Vol. 127, No. 30, pp 14557-14586, 2023
13. Y. Liu, S. C. Lau, W.H. Cheng, A. Johnson, Q. Li, E. Simmerman, O. Karni, J. Hu, F. Liu, M. L. Brongersma, T. F. Heinz, J. Dionne, “Controlling Valley-Specific Light Emission from Monolayer MoS2 with Achiral Dielectric Metasurfaces,” Nano Lett. Vol. 23, No. 13, pp 6124-6131, 2023
14. S. Peng, Y. Wang, M. Braun, Y. Yin, A. Meng, W. Tan, B. Saini, K. Severson, A. F. Marshall, K. Sytwu, J. D. Baniecki, J. Dionne, W. Cai, P. C. McIntyre, “Kinetics and Mechanism of Light-Induced Phase Separation in a Mixed-Halide Perovskite,” Matter, Vol. 6, No. 6, pp2052-2065, 2023
15. J. Dionne, S. Dagli, V. Shalaev, “Nanophotonics for a Sustainable Future,” Physics Today, Vol. 76, No. 6, pp24-24, 2023
16. L. Yuan, B. Bourgeois, C. Carlin, F. D. Jornada, J. Dionne, “Sustainable Chemistry with Plasmonic Photocatalysts,” Nanophotonics, Vol. 12, No. 14, pp 2745-2762, 2023
17. E. Klopfer, H. Carr Delgado, S. Dagli, M. Lawrence, Jennifer Dionne, “A Thermally Controlled High-Q Metasurface Lens,” Applied Physics Letters, Vol. 122, 221701 (7 pp.), 2023.
18. J. Dixon, F. Pan, P. Moradifar, P. Bordoloi, S. Dagli, J. Dionne, “Though Thick and Thin: How Optical Cavities Control Spin,” Nanophotonics, Vol. 12, No. 14, pp 2779-2788, 2023.
19. R. A. Vilá, D. T. Boyle, A. Dai, et al, J. Dionne, Y. Cui, LiH Formation and its Impact on Li Batteries Revealed by Cryogenic Electron Microscopy, Science Advances, Vol. 9, No. 12, pp eadf3609, 2023.

20. F. Safir, N.Vu, L. F. Tadesse, K. Firouzi, N. Banaei, S. Jeffrey, A. A.E. Saleh, B. Khuri-Yakub, J. Dionne, "Combining Acoustic Bioprinting with AI-Assisted Raman Spectroscopy for High-Throughput Identification of Bacteria in Blood," Nano Lett. Vol. 23, No. 6, pp 2065-2073, 2023.
21. L. Lin, J. Hu, S. Dagli, J. Dionne, M. Lawrence, "Universal Narrowband Wavefront Shaping with High Quality Factor Meta-Reflect-Arrays," Nano Letters. Vol. 23, No. 4, pp 1355-1362, 2023
22. A. Al-Zubeidi, B. Ostovar, C. Carlin, et al, S. Roberts, J. Dionne, P. Rossy, C. Landes, S. Link, "Mechanism for plasmon-generated solvated electrons, *Proc. Nat. Acad. Sci*., Vol. 120, No. 3, 2023

SELECTED PATENTS

1. Craig Levin, Garry Chinn, Jennifer Dionne, Parivash Moradifar, Yushin Kim, "A 'super-scintillator' for PET using nanophotonic metamaterial scintillator," 22-239
2. Jennifer Dionne, Daniel Angell, Briley Bourgeois, Alan Dai, Dayne Swearer, "Bimetallic alloyed plasmonic photocatalysis," 22-212
3. Jennifer Dionne, Jack Hu, Fareeha Safir, M. Lawrence, Butrus Khuri-Yakub, J. Dixon, S. Jeffrey, "Resonant nanophotonic biosensors," WO2022076832A1
4. Jennifer Dionne, Amr Saleh, Ahmed Shuaibi, "A method for compact and low-cost vibrational spectroscopy platforms," 20-519
5. Stefanie Jeffrey, Jennifer Dionne, Amr Saleh, Jack Hu, Loza Tadesse, "Label-free, real-time, whole-cell response monitoring with liquid Raman spectroscopy," WO2022051364A1
6. Elissa Klopfer, Jennifer Dionne, Mark Lawrence, David Barton, Sahil Dagli, "Electrically-reconfigurable high quality factor metasurfaces for dynamic wavefront shaping," WO2022060858A1
7. J. Dixon, M. Lawrence, D. Barton III, J. Dionne, "Self-isolated nanoscale laser," Patent # WO2022036314A1
8. D. Barton III, M. Lawrence, J. Dionne, J. Dixon, "High quality factor non-uniform metasurfaces," U.S. Pat. # US20210132255A1
9. Jennifer Dionne, Amr Saleh, Daniel Angell, "Sub-wavelength Raman imaging with combined optical and electron excitation," 19-161
10. J. Dionne, M. Solomon, J. Hu, M. Lawrence, "Metasurface device for detecting optical chirality," WO2021092526A1
11. Butrus Khuri-Yakub, Niaz Banaei, Jennifer Dionne, Amr Saleh, "Systems and methods of particle identification in solution," EP4049007A1
12. R. Mehlenbacher, A. Lay, R. Kolbl, M. Goodman, J. Dionne. "Quantum Converting Nanoparticles as In Vivo and In Situ Optical Electric Field Sensors, "The Board of Trustees of the Leland Stanford Junior University, U.S. Pat. App. 20190235002
13. J. Dionne, L. Poulikakos, M. Lawrence, D. Barton III, "Metasurfaces for optical detection of tissue and fibrous material anisotropy", The Board of Trustees of the Leland Stanford Junior University, U.S. Pat. App. 17/031,340.
14. J. Dionne, A. Salleo, and D. Wu, "Electrically conductive material for conversion of infrared to visible light," The Board of Trustees of the Leland Stanford Junior University, U.S. Pat. Doc 796,902.
15. J. Dionne, C.-S. Ho, A. Echarri, M. Solomon, J. Hu, "Enantioselective destruction of chiral molecules," The Board of Trustees of the Leland Stanford Junior University, U.S. Pat. #10,611,752.

SELECT INVITED TALKS AND LECTURES

1. White House National Nanoscience Initiative, March 2024
2. Nature Nanomaterials for Biomedicine, India, February 2024
3. Quantum Economic Development Consortium, December 2023
4. International Microscopy Congress, Korea, September 2023
5. Surface Plasmon Photonics (SPP10) Plenary Speaker, Rice University, June 2023

6. Gordon Research Conference, Upconverting Nanoparticles, Waterville, NH, June 2023
7. Nature Materials/MRS Bulletin, Frontiers of Biological Materials Workshop, September 2023
8. Columbia, Bent Lecture, April 2023
9. NWO (Dutch Research Council) Physics Plenary Speaker, The Netherlands, April 2023
10. Presentation to the President of the Special Economic Zone of the Canary Islands/ SHIFT Conference, October 2022
11. Near Field Optics (NFO16), Victoria, CA, September 2022
12. Noble Metal Nanoparticle Gordon Conference, Newry ME, June 2022
13. Symposium X speaker, Materials Research Society Meeting, April 2022
14. Kroto Lectureship, University of Florida, April 2022
15. Nature Nanotechnology Anniversary symposium, October 2021
16. Marple-Schweitzer Lecture, Northwestern University, May 2021
17. Nano Letters Global Lectureship, April 2021
18. MRS Spring Meeting, Metasurface Symposium (Keynote), April 2021
19. Plenary Lecture: Upcon, Paris, April 2021
20. Plenary Lecture: MRS COVID Symposium, December 2020
21. Gordon Research Conference, Plasmonics and Nanophononics, Newry, ME, July 2020.
22. Gordon Research Conference, Noble Metal Nanoparticles, Mt Holyoke, MA, June 2022.
23. Plenary Lecturer, International Microscopy Congress, Sydney, 2018
24. Plenary speaker: International Symposium on Singlet Fission and Photon Upconversion, Gothenburg, Sweden, April 2016
25. National Academy of Engineers, Frontiers of Engineering Symposium, 2012
26. Plenary speaker: Boston University Photonics Center Symposium, Boston, MA, December 2015
27. Plenary speaker: The 3rd Life/Art/Science/Technology Festival, Stanford, CA, October 2015
28. One of the initial five speakers at the LAST (Life-Art-Science-Technology) Festival, along with Alvy Ray Smith, Peter Norvig, Daniel Kaufman, and Chris McKay, San Jose, CA, June 2014.
29. Kavli Lecture, Materials Research Symposium, Boston, MA, November 2013.
30. Invited Instructor, Summer School on Plasmonics, Cargese, France, August 2013.
31. MAGICUS Lecturer, Cornell University, Ithaca, NY, April 2013.
32. Invited Instructor, Workshop on Nanophotonics, Trieste, Italy, December 2012.
33. Gordon Research Conference, Noble Metal Nanoparticles, Mt. Holyoke, MA, July 2012.
34. Gordon Research Conference, Plasmonics, Waterville, ME, June 2010.
35. Gordon Research Conference, Plasmonics, Tilton, NH, July 2008.