CURRICULUM VITAE

Ali Javey, Ph.D.

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Date of Birth:	December 3, 1980

Academic Appointments

2017- present	*Lam Research Distinguished Chair in Semiconductor Processing* Electrical Engineering and Computer Sciences University of California at Berkeley
2015- 2017	*Conexant Systems Distinguished Professor* Electrical Engineering and Computer Sciences University of California at Berkeley
2014- present	*Professor* Electrical Engineering and Computer Sciences University of California at Berkeley
2010- 2014	*Associate Professor* Electrical Engineering and Computer Sciences University of California at Berkeley
2006 – 2010	*Assistant Professor* Electrical Engineering and Computer Sciences University of California at Berkeley (2005-2006, on leave)
2019 - present	*Senior Faculty Scientist* Materials Sciences Division Lawrence Berkeley National Laboratory
2006 - 2019	*Faculty Scientist* Materials Sciences Division Lawrence Berkeley National Laboratory
2011- present	*Program Leader* Electronic Materials Lawrence Berkeley National Laboratory
2011- 2023	*Associate Editor* *ACS Nano*

2011-2018	*Co-Director* Bay Area PV Consortium - DOE funded program ($25 million for 5 years)
2008-Present	*Co-Director* Berkeley Sensor and Actuator Center (BSAC) – NSF/industry funded research center at UC Berkeley with ~40 member companies.
2005 - 2006	*Junior Fellow* Harvard Society of Fellows Harvard University

Faculty Affiliations

2007 -	Applied Science & Technology Graduate Program, UC Berkeley
2006 -	Nanoscale Science & Engineering Graduate Group, UC Berkeley
2019 -	Kavli Energy Nanoscience Institute, UC Berkeley

Education

2005	Ph.D., Physical Chemistry, Stanford University
2001	B.S., Chemistry, Old Dominion University

Research Interests

high performance nanoelectronics; flexible electronics and sensors; nanofabrication; energy harvesting and conversion; programmable matter

Awards and Honors

2023	*IEEE Fellow*
2020	*Dan Maydan Prize in Nanoscience Research*
2016	*Bakar Fellow (UC Berkeley)*
2015	*MRS Outstanding Young Investigator Award*
2014	*Nano Letters* Young Investigator Lectureship
2014	*Blavatnik* National Award for Young Scientists Finalist
2012	*UC Berkeley Electrical Engineering Outstanding Teaching Award*
2011	*APEC Science Prize for Innovation, Research and Education*
2011	*Netexplorateur of the Year Award*
2010	*IEEE Nanotechnology Early Career Award*
2010	*Alfred P. Sloan Research Fellow*
2010	*Mohr Davidow Ventures (MDV) Innovator Award*
2009	*MIT Technology Review TR35*
2009	*National Academy of Sciences Award for Initiatives in Research*
2008	*National Science Foundation CAREER Award*
2008	*U.S. Frontiers of Engineering, National Academy of Engineering*

2004	*Election to Harvard Society of Fellows, Junior Fellow*
2004	*MRS Graduate Student Gold Award*
2003-2005	*Semiconductor Research Corporation Peter Verhofstadt Fellowship*
2001	*Hampton Roads Section of the American Chemical Society (ACS) Award to the Outstanding Graduating Senior in Chemistry*
1998-2001	*Tidewater Builders Association Scholarship*

Book & Book Chapter:

1. A. Javey, J. Kong (Eds.), "*Carbon Nanotube Electronics*", (Springer, New York, 2009).

2. Z. Fan, J. C. Ho, A. Javey, "Progresses and Challenges of Nanowire Integrated Circuitry", in *Nanoelectronics: Nanowires, Molecular Electronics, and Nanodevices*, Ed. K. Iniewski, (McGraw-Hill, New York, 2010).

Publications: *(>72,000 citations, h-index= 128; Google Scholar,11/2023)*

1. N. Higashitarumizu, S. Tajima, J. Kim, M. Cai, A. Javey, "Long operating lifetime mid-infrared LEDs based on black phosphorus", *Nature Communications*, 14, 4845, 2023.

2. V. Wang, S. Z. Uddin, J. Park, A. Javey, "Highly multicolored light emitting arrays for compressive spectroscopy", *Science Advances*, 9, eadg1607, 2023.

3. N. Higashitarumizu, S. Z. Uddin, D. Weinberg, N. S. Azar, I. K. M. R. Rahman, V. Wang, K. B. Crozier, E. Rabani, A. Javey, "Anomalous thickness dependence of photoluminescence quantum yield in black phosphorous", *Nature Nanotechnology*, 18 (5), 507-513, 2023.

4. Jongchan Kim, Vivian Wang, Seung Chan Kim, Jun Yeob Lee, Ali Javey, "A Color-Tunable Alternating Current Organic Light Emitting Capacitor", *Nano Letters*, 23, 12, 5822–5827, 2023.

5. A. Aggarwal, M. Dautta, L. F. Ayala-Cardona, A. Wudaru, A. Javey, "Wearable Humidity Sensor for Continuous Sweat RateMonitoring", *Advanced Materials Technologies*, 2023 (DOI - https://doi.org/10.1002/admt.202300385).

6. S. Balendhran, M. Taha, S. Wang, W. Yan, N. Higashitarumizu, D. Wen, N. Sefidmooye Azar, J. Bullock, P. Mulvaney, A. Javey, K. B. Crozier, "Flexible Vanadium Dioxide Photodetectors for Visible to Longwave Infrared Detection at Room Temperature", *Advanced Functional Materials*, 2023 (DOI - https://doi.org/10.1002/adfm.202301790).

7. Kaichen Dong, Jiachen Li, Tiancheng Zhang, Fangda Gu, Yuhang Cai, Niharika Gupta, Kechao Tang, Ali Javey, Jie Yao, Junqiao Wu, "Single-pixel reconstructive mid-infrared micro-spectrometer", *Optics Express*, 31, 9, 14367-14376, 2023.

8. G. H. Ahn, A. D. White, H. Kim, N. Higashitarumizu, F. M. Mayor, J. F. Herrmann, W. Jiang, K. K.S. Multani, A. H. Safavi-Naeini, A. Javey, J. Vučković, “Platform-agnostic waveguide integration of high-speed photodetectors with evaporated tellurium thin films”, *Optica*, 10, 3, 349-355, 2023.

9. Y. Luo, et al, “Technology Roadmap for Flexible Sensors”, *ACS Nano*, 17, 6, 5211–5295, 2023.

10. J. M. Buriak, et al, “Best Practices for Using AI When Writing Scientific Manuscripts: Caution, Care, and Consideration: Creative Science Depends on It”, *ACS Nano*, 17, 5, 4091–4093, 2023.

11. T. Schenkel, A. M. Snijders, K. Nakamura, P. A. Seidl, B. Mak, L. Obst-Huebl, H. Knobel, I. Pong, A. Persaud, J. van Tilborg, T. Ostermayr, S. Steinke, E. A. Blakely, Q. Ji, A. Javey, R. Kapadia, C. G. R. Geddes, E. Esarey, “Carbon nanotube substrates enhance SARS-CoV-2 spike protein ion yields in matrix-assisted laser desorption–ionization mass spectrometry”, *Applied Physics Letters*, 122, 050601, 2023.

12. M. Dautta, L. F. Ayala-Cardona, N. Davis, A. Aggarwal, J. Park, S. Wang, L. Gillan, E. Jansson, M. Hietala, H. Ko, J. Hiltunen, A. Javey, “Tape-Free, Digital Wearable Band for Exercise Sweat Rate Monitoring”, *Advanced Materials Technologies*, 2201187, 2023.

13. I. K. M. R. Rahman, S. Z. Uddin, H. Kim, N. Higashitarumizu, A. Javey, "Low voltage AC electroluminescence in silicon MOS capacitors", *Applied Physics Letters*, 121 (19), 193502, 2022.

14. B. Sari, H. Batiz, C. Zhao, A. Javey, D.C. Chrzan, M.C. Scott, “Structural heterogeneity in non-crystalline Te_xSe_{1-x} thin films”, *Applied Physics Letters,* 121, 012101, 2022.

15. S. Z. Uddin, N. Higashitarumizu, H. Kim, I.K.M.R. Rahman, A. Javey, “Efficiency Roll-Off Free Electroluminescence from Monolayer WSe_2”, *Nano Letters*, 22, 5316–5321, 2022.

16. H. Batiz, J. Guo, G.H. Ahn, H. Kim, A. Javey, J.W. Ager III, D.C. Chrzan, “Theory of liquid-mediated strain release in two-dimensional materials”, *Physical Review Materials,* 6 (5), 054005, 2022.

17. S.Z. Uddin, N. Higashitarumizu, H. Kim, J. Yi, X. Zhang, D. Chrzan, A. Javey, “Enhanced Neutral Exciton Diffusion in Monolayer WS2 by Exciton-Exciton Annihilation”, *ACS Nano*, 16 (5), 8005-8011, 2022.

18. M. Bariya, N. Davis, L. Gillan, E. Jansson, A. Kokkonen, C. McCaffrey, J. Hiltunen, A. Javey, “Resettable Microfluidics for Broad-Range and Prolonged Sweat Rate Sensing”, *ACS Sensors*, 7 (4), 1156-1164, 2022.

19. C. Zhao, H. Batiz, B. Yasar, W. Ji, M.C. Scott, D.C. Chrzan, A. Javey, “Orientated Growth of Ultrathin Tellurium by van der Waals Epitaxy”, *Advanced Materials Interfaces,* 9 (5), 2101540, 2022.

20. N. Gupta, H. Kim, N.S. Azar, S.Z. Uddin, D.-H. Lien, K.B. Crozier, A. Javey, “Bright Mid-Wave Infrared Resonant-Cavity Light-Emitting Diodes Based on Black Phosphorus”, *Nano letters,* 22 (3), 1294-1301, 2022.

21. S.Z. Uddin, N. Higashitarumizu, H. Kim, E. Rabani, A. Javey, “Engineering Exciton Recombination Pathways in Bilayer WSe_2 for Bright Luminescence”, *ACS Nano*, 16 (1), 1339-1345, 2022.

22. Y. Rho, H. Kim, A. Javey, C.P. Grigoropoulos, “Laser-Assisted Thermomechanical Thinning of $MoTe_2$ in Nanoscale Lateral Resolution”, *Advanced Materials Interfaces*, 2200634, 2022.

23. H. Kim, S. Z. Uddin, D.-H. Lien, M. Yeh, N. S. Azar, S. Balendhran, T. Kim, N. Gupta, Y. Rho, C. P. Grigoropoulos, K. B. Crozier, A. Javey, "Actively variable spectrum optoelectronics with black phosphorus", *Nature*, 596, 232–237, 2021.

24. H. Kim, S. Z. Uddin, N. Higashitarumizu, E. Rabani, A. Javey, "Inhibited nonradiative decay at all exciton densities in monolayer semiconductors", *Science*, 373, 448, 2021.

25. K. Tang, K. Dong, J. Li, M. P. Gordon, F. G. Reichertz, H. Kim, Y. Rho, Q. Wang, C.-Y. Lin, C. P. Grigoropoulos, A. Javey, J. J. Urban, J. Yao, R. Levinson, J. Wu, "Temperature-adaptive radiative coating for all-season household thermal regulation", *Science*, 374, 1504–1509, 2021.

26. H. Y. Y. Nyein, M. Bariya, B. Tran, C. H. Ahn, B. J. Brown, W. Ji, N. Davis, A. Javey, "A wearable patch for continuous analysis of thermoregulatory sweat at rest", *Nature Communications*, 12, 1823, 2021.

27. V. Wang, A. Javey, "A Resonantly Driven, Electroluminescent Metal Oxide Semiconductor Capacitor with High Power Efficiency", *ACS Nano*, 15, 9, 15210–15217, 2021.

28. C. Zhao, H. Batiz, B. Yasar, H. Kim, W. Ji, M. C. Scott, D. C. Chrzan, A. Javey. "Tellurium Single-Crystal Arrays by Low-Temperature Evaporation and Crystallization", *Advanced Materials*, 33 (37), 2100860, 2021.

29. S. Balendhran, Z. Hussain, V. R. Shrestha, J. Cadusch, M. Ye, N. S. Azar, H. Kim, R. Ramanathan, J. Bullock, A. Javey, V. Bansal, K. B. Crozier, "Copper Tetracyanoquinodimethane (CuTCNQ): A Metal–Organic Semiconductor for Room-Temperature Visible to Long-Wave Infrared Photodetection", *ACS Applied Materials & Interfaces*, 13 (32), 38544-38552, 2021.

30. N. S. Azar, J. Bullock, S. Balendhran, H. Kim, A. Javey, K. B. Crozier, "Light–Matter Interaction Enhancement in Anisotropic 2D Black Phosphorus via Polarization-Tailoring Nano-Optics", *ACS Photonics*, 8, 1120-1128, 2021.

31. Y. Lin, M. Bariya, A. Javey, "Wearable Biosensors for Body Computing", *Advanced Functional Materials*, 31 (39), 2170290, 2021.

32. N. S. Azar, J. Bullock, V. R. Shrestha, S. Balendhran, W. Yan, H. Kim, A. Javey, K. B. Crozier, "Long-Wave Infrared Photodetectors Based on 2D Platinum Diselenide atop Optical Cavity Substrates", *ACS Nano*, 15, 6573-6581, 2021.

33. S. Z. Uddin, E. Rabani, A. Javey, "Universal Inverse Scaling of Exciton−Exciton Annihilation Coefficient with Exciton Lifetime", *Nano Letters*, 21, 1, 424–429, 2021.

34. V. Wang, Y. Zhao, A. Javey, "Performance Limits of an Alternating Current Electroluminescent Device", *Advanced Materials*, 33 (2), 2005635, 2021.

35. J. Zhao, H. Y. Y. Nyein, L. Hou, Y. Lin, M. Bariya, C. H. Ahn, W. Ji, Z. Fan, A. Javey, "A Wearable Nutrition Tracker", *Advanced Materials*, 33 (1), 2006444, 2021.

36. Y. Zhao, V. Wang, D.-H. Lien, A. Javey, "A generic electroluminescent device for emission from infrared to ultraviolet wavelengths", *Nature Electronics*, 3, 612–621, 2020.

37. L. Gu, S. Poddar, Y. Lin, Z. Long, D. Zhang, Q. Zhang, L. Shu, X. Qiu, M. Kam, A. Javey, Z. Fan, "A biomimetic eye with a hemispherical perovskite nanowire array retina", *Nature*, 581, 278–282, 2020.

38. C. Zhao, C. Tan, D.-H. Lien, X. Song, M. Amani, M. Hettick, H. Y. Y. Nyein, Z. Yuan, L. Li, M. C. Scott, A. Javey, "Evaporated tellurium thin films for p-type field-effect transistors and circuits", *Nature Nanotechnology*, 15, 53–58, 2020. (additional article in news & views)

39. M. Hettick, H. Li, D.-H. Lien, M. Yeh, T.-Y. Yang, M. Amani, N. Gupta, D. C. Chrzan, Y.-L. Chueh, A. Javey, "Shape-controlled single-crystal growth of InP at low temperatures down to 220 °C", *Proceedings of the National Academy of Sciences (PNAS),* 117 (2) 902-906, 2020.

40. M. Bariya, L. Li, R. Ghattamaneni, C. H. Ahn, H. Y. Y. Nyein, L.-C. Tai, A. Javey, "Glove-based sensors for multimodal monitoring of natural sweat", *Science Advances*, 6, 35, eabb8308, 2020.

41. Y. Zhao, V. Wang, A. Javey, "Molecular Materials with Short Radiative Lifetime for High-Speed Light-Emitting Devices", *Matter*, 3 (6), 1832-1844, 2020.

42. S. Z. Uddin, H. Kim, M. Lorenzon, M. Yeh, D.-H. Lien, E. S. Barnard, H. Htoon, A. Weber-Bargioni, A. Javey, "Neutral Exciton Diffusion in Monolayer MoS_2", *ACS Nano*, 14, 13433–13440, 2020.

43. D. W. Gardner, Y. Xia, H. M. Fahad, A. Javey, C. Carraro, R. Maboudian, "Improved Hydrogen Sensitivity and Selectivity in PdO with Metal-Organic Framework Membrane", *Journal of the Electrochemical Society*, 167, 147503, 2020.

44. C. Tan, M. Amani, C. Zhao, M. Hettick, X. Song, D.-H. Lien, H. Li, M. Yeh, V. R. Shrestha, K. B. Crozier, M. C. Scott, A. Javey, "Evaporated Se_xTe_{1-x} Thin Films

with Tunable Bandgaps for Short-Wave Infrared Photodetectors", *Advanced Materials*, 32, 2001329, 2020.

45. H. Liu, X. Yu, K. Wu, Y. Gao, S. Tongay, A. Javey, L. Chen, J. Hong, J. Wu, "Extreme in-plane thermal conductivity anisotropy in titanium trisulfide caused by heat-carrying optical phonons", *Nano Letters*, 20, 5221–5227, 2020.

46. A. J. Goodman, D.-H. Lien, G. H. Ahn, L. L. Spiegel, M. Amani, A. P. Willard, A. Javey, W. A. Tisdale, "Substrate-Dependent Exciton Diffusion and Annihilation in Chemically Treated MoS_2 and WS_2", *The Journal of Physical Chemistry C*, 124, 12175–12184, 2020.

47. L.-C. Tai, C. H. Ahn, H. Y. Y. Nyein, W. Ji, M. Bariya, Y. Lin, L. Li, A. Javey, "Nicotine Monitoring with Wearable Sweat Band", *ACS Sensors*, 5, 1831–1837, 2020.

48. Z. Yuan, M. Bariya, H. M. Fahad, J. Wu, R. Han, N. Gupta, A. Javey, "Trace-Level, Multi-Gas Detection for Food Quality Assessment Based on Decorated Silicon Transistor Arrays", *Advanced Materials*, 1908385, 2020.

49. W. Ji, T. Allen, X. Yang, G. Zeng, S. De Wolf, A. Javey, "Polymeric Electron-Selective Contact for Crystalline Silicon Solar Cells with an Efficiency Exceeding 19%", *ACS Energy Letters*, 5, 897-902, 2020.

50. J. Cho, M. Amani, D.-H. Lien, H. Kim, M. Yeh, V. Wang, C. Tan, A. Javey, "Centimeter-Scale and Visible Wavelength Monolayer Light-Emitting Devices", *Advanced Functional Materials*, 1907941, 2019.

51. Y. Yu, H. Y. Y. Nyein, W. Gao, A. Javey, "Flexible Electrochemical Bioelectronics: The Rise of In Situ Bioanalysis", *Advanced Materials*, 1902083, 2019.

52. J. Sun, A. Sapkota, H. Park, P. Wesley, Y. Jung, B. B. Maskey, Y. Kim, Y. Majima, J. Ding, J. Ouyang, C. Guo, J. Lefebvre, Z. Li, P. R. L. Malenfant, A. Javey, G. Cho, "Fully R2R-Printed Carbon-Nanotube-Based Limitless Length of Flexible Active-Matrix for Electrophoretic Display Application", *Advanced Electronic Materials*, 6(4), 1901431, 2020.

53. H. Liu, C. Yang, B. Wei, L. Jin, A. Alatas, A. Said, S. Tongay, F. Yang, A. Javey, J. Hong, J. Wu, "Anomalously Suppressed Thermal Conduction by Electron-Phonon Coupling in Charge-Density-Wave Tantalum Disulfide", *Advanced Science*, 1902071, 2020.

54. C. Zhao, L. Hurtado, A. Javey, "Thermal stability for Te-based devices", *Appl. Phys. Lett.* 117, 192104, 2020.

55. V. R. Shrestha, B. Craig, J. Meng, J. Bullock, A. Javey, K. B. Crozier, "Mid-to long-wave infrared computational spectroscopy with a graphene metasurface modulator", *Scientific Reports*, 10, 5377, 2020.

56. H. Taz, B. Prasad, Y.-L. Huang, Z. Chen, S.-L. Hsu, R. Xu, V. Thakare, T. S. Sakthivel, C. Liu, M. Hettick, R. Mukherjee, S. Seal, L. W. Martin, A. Javey, G. Duscher, R. Ramesh, R. Kalyanaraman, "Integration of amorphous ferromagnetic

oxides with multiferroic materials for room temperature magnetoelectric spintronics", *Scientific Reports*, 10, 3583, 2020.

57. H. Zhao, Y. Zhao, Y. Song, M. Zhou, W. Lv, L. Tao, Y. Feng, B. Song, Y. Ma, J. Zhang, J. Xiao, Y. Wang, D.-H. Lien, M. Amani, H. Kim, X. Chen, Z. Wu, Z. Ni, P. Wang, Y. Shi, H. Ma, X. Zhang, J.-B. Xu, A. Troisi, A. Javey, X. Wang, "Strong optical response and light emission from a monolayer molecular crystal", *Nature Communications*, 10, 5589, 2019.

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60. H. Y. Y. Nyein, M. Bariya, L. Kivimäki, S. Uusitalo, T. S. Liaw, Elina Jansson, C. H. Ahn, J. A. Hangasky, J. Zhao, Y. Lin, T. Happonen, M. Chao, C. Liedert, Y. Zhao, L.-C. Tai, J. Hiltunen, A. Javey, "Regional and Correlative Sweat Analysis Using High-throughput Microfluidic Sensing Patches Towards Decoding Sweat", *Science Advances*, 5 (8), eaaw9906, 2019.

61. T. Allen, J. Bullock, X. Yang, A. Javey, S. De Wolf, "Passivating contacts unlock the full potential of silicon solar cells", *Nature Energy*, 4, 914–928, 2019.

62. Z. Yuan, L. Hou, M. Bariya, H. Y. Y. Nyein, L.-C. Tai, W. Ji, L. Li, A. Javey, "A Multi-Modal Sweat Sensing Patch for Cross-Verification of Sweat Rate, Total Ionic Charge, and Na+ Concentration", *Lab on a Chip*, 19, 3179 - 3189, 2019.

63. L.-C. Tai, T. S. Liaw, Y. Lin, H. Y. Y. Nyein, M. Bariya, W. Ji, M. Hettick, C. Zhao, J. Zhao, L. Hou, Z. Yuan, Z. Fan, A. Javey, "A Wearable Sweat Band for Noninvasive Levodopa Monitoring", *Nano Letters*, 19, 6346-6351, 2019.

64. D.-H. Lien, S. Z. Uddin, M. Yeh, M. Amani, H. Kim, J. W. Ager III, E. Yablonovitch, and A. Javey, "Electrical suppression of all nonradiative recombination pathways in monolayer semiconductors", *Science*, 364, 468–471, 2019.

65. H. Kim, G. H. Ahn, J. Cho, M. Amani, J. P. Mastandrea, C. K. Groschner, D.-H. Lien, Y. Zhao, J. W. Ager III, M. C. Scott, D. C. Chrzan, A. Javey, "Synthetic WSe_2 monolayers with high photoluminescence quantum yield", *Science Advances*, 5, eaau4728, 2019.

66. Y. Yu, H. Y. Y. Nyein, W. Gao, A. Javey, "Flexible Electrochemical Bioelectronics: The Rise of In Situ Bioanalysis", *Advanced Materials*, 1902083, 2019.

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69. J. Bullock, Y. Wan, M. Hettick, X. Zhaoran, S. P. Phang, D. Yan, H. Wang, W. Ji, C. Samundsett, Z. Hameiri, D. Macdonald, A. Cuevas, A. Javey, "Dopant-Free Partial Rear Contacts Enabling 23% Silicon Solar Cells", *Advanced Energy Materials*, 1803367, 2019.

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