Bio

BIO
Eric Pop is a Professor of Electrical Engineering (EE) and Materials Science & Engineering (by courtesy) at Stanford, where he leads the SystemX Heterogeneous Integration focus area. Before Stanford, he spent several years on the faculty of UIUC, and in industry at Intel and IBM. His research interests are at the intersection of electronics, nanomaterials, and energy. He received his Ph.D. in EE from Stanford (2005) and three degrees from MIT (MEng and BS in EE, BS in Physics). In 2018 he was named one of the world's Highly Cited Researchers by Clarivate. His other honors include the Presidential Early Career (PECASE) Award, and Young Investigator Awards from the ONR, NSF, AFOSR and DARPA. He is an IEEE Fellow, he was General Chair of the IEEE Device Research Conference (DRC), and has served on program committees of the IEDM, VLSI, MRS, and APS conferences. More information about the Pop Lab can be found online at http://poplab.stanford.edu

ACADEMIC APPOINTMENTS
• Professor, Electrical Engineering
• Professor (By courtesy), Materials Science and Engineering
• Member, Bio-X
• Affiliate, Precourt Institute for Energy

ADMINISTRATIVE APPOINTMENTS
• Lead of EE Culture, Equity, and Inclusion (CEI) Committee, Electrical Engineering, (2019- present)
• Co-Lead of Heterogeneous Integration Focus Area, SystemX Alliance, (2015- present)

HONORS AND AWARDS
• Intel 2021 Outstanding Researcher Award, Intel (2021)
• IEEE Fellow, IEEE (2021)
• Highly Cited Researcher, Web of Science (2018)
• Golden Reviewers List, IEEE Electron Device Letters (2017, 2013-09)
• Most Cited Researchers List in EE, Elsevier (2016)
• Okawa Foundation Grant, Okawa Foundation (2014)
• Engineering Council Award for Excellence in Advising, UIUC (2013)
• Award for Faculty Research, Xerox/UIUC (2011)
• Center for Advanced Study (CAS) Fellowship, UIUC (2011)
• Outstanding Presentation Award, EPCOS Symposium (2011)
• Senior Member, IEEE (2011)
Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS
Research in the Pop Lab is at the intersection of nanoelectronics and nanoscale energy conversion. Most projects include both fundamental and applied, experimental and computational components. Some recent topics (as of 2013) include:

* Energy-efficient transistors, memory and integrated circuits
* Novel nanomaterials, e.g. graphene, BN, MoS2, carbon nanotubes, GeSbTe, etc.
* Fundamental physical limits of current and heat flow, e.g. ballistic electrons and phonons
* Applications of nanoscale energy transport, conversion and harvesting, e.g. thermoelectrics

For more details see the Pop Lab research website: http://poplab.stanford.edu

Teaching

COURSES
2021-22
• Circuits I: EE 101A (Win)
• Principles and Models of Semiconductor Devices: EE 216 (Aut)

2020-21
• Circuits I: EE 101A (Win)
• Introductory Research Seminar in Electrical Engineering: EE 301 (Aut)

2019-20
• Circuits I: EE 101A (Win)
• Energy in Electronics: EE 323 (Spr)
• Principles and Models of Semiconductor Devices: EE 216 (Aut)

2018-19
• Principles and Models of Semiconductor Devices: EE 216 (Win)
• Semiconductor Devices for Energy and Electronics: EE 116 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)
Minda Deng, Carlo Gilardi, Marc Jaikissoon, Jung-Soo Ko, Chris Perez, Maryann Tung, Yecun Wu, Dante Zakhidov

Postdoctoral Faculty Sponsor
Koosha Nassiri Nazif

Doctoral Dissertation Advisor (AC)
Connor Bailey, Michelle Chen, Victoria Chen, Mahnaz Islam, Asir Intisar Khan, Cagil Koroglu, Crystal Nattoo, Katie Neilson, Kirstin Schauble, Sumaiya Wahid, Maritha Wang, Jerry Yang

Master's Program Advisor
Chloe Delmotte

Doctoral (Program)
Connor Bailey, Robert Bennett, Lauren Hoang, Fei Huang, Cassandra Huff, Katie Neilson, Robert Radway, Sumaiya Wahid, Yecun Wu, Jerry Yang, Sofie de Olazarra

Publications

PUBLICATIONS

• Fast-Response Flexible Temperature Sensors with Atomically Thin Molybdenum Disulfide. *Nano letters*
  Daus, A., Jaikissoon, M., Khan, A. I., Kumar, A., Grady, R. W., Saraswat, K. C., Pop, E.
  2022

• Unveiling the Effect of Superlattice Interfaces and Intermixing on Phase Change Memory Performance. *Nano letters*
  Khan, A. I., Wu, X., Perez, C., Won, B., Kim, K., Ramesh, P., Kwon, H., Tung, M. C., Lee, Z., Oh, I., Saraswat, K., Asheghi, M., Goodson, et al
  2022

• Extended Scale Length Theory for Low-Dimensional Field-Effect Transistors *IEEE TRANSACTIONS ON ELECTRON DEVICES*
  Gilardi, C., Bennett, R. A., Yoon, Y., Pop, E., Wong, H., Mitra, S.
  2022

• Ultra-low-energy programmable non-volatile silicon photonics based on phase-change materials with graphene heaters *NATURE NANOTECHNOLOGY*
  Fang, Z., Chen, R., Zheng, J., Khan, A., Neilson, K. M., Geiger, S. J., Callahan, D. M., Moebius, M. G., Saxena, A., Chen, M. E., Rios, C., Hu, J., Pop, et al
  2022
• How to report and benchmark emerging field-effect transistors. Nature Electronics
Cheng, Z., Pang, C., Wang, P., Le, S. T., Wu, Y., Shahrjerdi, D., Radu, I., Lemme, M. C., Peng, L., Duan, X., Chen, Z., Appenzeller, J., Koester, et al
2022; 5 (7): 416-423

• Substrate-dependence of monolayer MoS2 thermal conductivity and thermal boundary conductance. Journal of Applied Physics
Gabourie, A. J., Koroglu, C., Pop, E.
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• Nonequilibrium Phonon Thermal Resistance at MoS2/Oxide and Graphene/Oxide Interfaces. ACS applied materials & interfaces
Zheng, W., McClellan, C. J., Pop, E., Koh, Y. K.
2022

• Direct measurement of nanoscale filamentary hot spots in resistive memory devices. Science Advances
Deshmukh, S., Rojo, M. M., Yalon, E., Vaziri, S., Koroglu, C., Islam, R., Iglesias, R. A., Saraswat, K., Pop, E.
2022; 8 (13): eabk1514

• Electrically driven reprogrammable phase-change metasurface reaching 80% efficiency. Nature communications
Abdollahramezani, S., Hemmatyar, O., Taghinejad, M., Taghinejad, H., Krasnok, A., Eftekhar, A. A., Teichrib, C., Deshmukh, S., El-Sayed, M. A., Pop, E., Wuttig, M., Alo, A., Cai, et al
2022; 13 (1): 1696

• Temperature-dependent thermal resistance of phase change memory. Applied Physics Letters
Stern, K., Keller, Y., Neumann, C. M., Pop, E., Yalon, E.
2022; 120 (11)

• Electro-Thermal Confinement Enables Improved Superlattice Phase Change Memory. IEEE Electron Device Letters
Khan, A., Kwon, H., Chen, M. E., Asheghi, M., Wong, H., Goodson, K. E., Pop, E.
2022; 43 (2): 204-207

• High-specific-power flexible transition metal dichalcogenide solar cells. Nature communications
Nassiri Nazif, K., Daus, A., Hong, J., Lee, N., Vaziri, S., Kumar, A., Nitta, F., Chen, M. E., Kananian, S., Islam, R., Kim, K., Park, J., Poon, et al
2021; 12 (1): 7034

• Lateral electrical transport and field-effect characteristics of sputtered p-type chalcogenide thin films. Applied Physics Letters
Wahid, S., Daus, A., Khan, A., Chen, V., Neilson, K. M., Islam, M., Chen, M. E., Pop, E.
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• Transistors based on two-dimensional materials for future integrated circuits. Nature Electronics
Das, S., Sebastian, A., Pop, E., McClellan, C. J., Franklin, A. D., Grasser, T., Knobloch, T., Illarionov, Y., Penumatcha, A. V., Appenzeller, J., Chen, Z., Zhu, W., Asselberghs, et al
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• Vibrational Properties of a Naturally Occurring Semiconducting van der Waals Heterostructure. Journal of Physical Chemistry C
Costa, V., Liang, L., Vaziri, S., Miller, A., Pop, E., Newaz, A. M.
2021; 125 (39): 21607-21613

• Application-driven synthesis and characterization of hexagonal boron nitride deposited on metals and carbon nanotubes. 2D Materials
Chen, V., Shin, Y., Mikheev, E., Lin, Q., Martis, J., Zhang, Z., Chatterjee, S., Majumdar, A., Wong, H., Goldhaber-Gordon, D., Pop, E.
2021; 8 (4)

• Field-effect at electrical contacts to two-dimensional materials (Jul, 10.1007/s12274-021-3670-y, 2021). Nano Research
Guo, Y., Sun, Y., Tang, A., Wang, C., Zhao, Y., Bai, M., Xu, S., Xu, Z., Tang, T., Wang, S., Qiu, C., Xu, K., Peng, et al
2021

• Sub-Nanosecond Pulses Enable Partial Reset for Analog Phase Change Memory. IEEE Electron Device Letters
Stern, K., Wainstein, N., Keller, Y., Neumann, C. M., Pop, E., Kvatinsky, S., Yalon, E.
2021; 42 (9): 1291-1294

• Toward Low-Temperature Solid-Source Synthesis of Monolayer MoS2. ACS Applied Materials & Interfaces
Tang, A., Kumar, A., Jaikissoom, M., Saraswat, K., Wong, H. P., Pop, E.
• **Field-effect at electrical contacts to two-dimensional materials.** *Nano research*
  Guo, Y., Sun, Y., Tang, A., Wang, C., Zhao, Y., Bai, M., Xu, S., Xu, Z., Tang, T., Wang, S., Qiu, C., Xu, K., Peng, et al
  2021: 1-7

• **A Comprehensive Study of WSe2 Crystals Using Correlated Raman, Photoluminescence (PL), Second Harmonic Generation (SHG), and Atomic Force Microscopy (AFM) Imaging** *SPECTROSCOPY*
  Schmidt, U., Bailey, C. S., Englert, J., Yalon, E., Ankonina, G., Pop, E., Hollricher, O., Dieing, T.
  2021; 36 (7): 23-30

• **Graphene-based electromechanical thermal switches** *2D MATERIALS*
  Chen, M. E., Rojo, M., Lian, F., Koeln, J., Sood, A., Bohaiuchuk, S. M., Neumann, C. M., Garrow, S. G., Goodson, K. E., Alleyne, A. G., Pop, E.
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• **High-performance flexible nanoscale transistors based on transition metal dichalcogenides** *NATURE ELECTRONICS*
  Daus, A., Vaziri, S., Chen, V., Koroglu, C., Grady, R. W., Bailey, C. S., Lee, H., Schaubkle, K., Brenner, K., Pop, E.
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• **Uncovering Phase Change Memory Energy Limits by Sub-Nanosceond Probing of Power Dissipation Dynamics** *ADVANCED ELECTRONIC MATERIALS*
  Stern, K., Wainstein, N., Keller, Y., Neumann, C. M., Pop, E., Kvatsinsky, S., Yalon, E.
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• **Spectral decomposition of thermal conductivity: Comparing velocity decomposition methods in homogeneous molecular dynamics simulations** *PHYSICAL REVIEW B*
  Gabourie, A. J., Fan, Z., Afa-Nissila, T., Pop, E.
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• **Ultrathin Three-Monolayer Tunneling Memory Selectors.** *ACS nano*
  Wang, C., Chen, V., McClellan, C. J., Tang, A., Vaziri, S., Li, L., Chen, M. E., Pop, E., Wong, H. P.
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• **Carbon nanotube thermoelectric devices by direct printing: Toward wearable energy converters** *APPLIED PHYSICS LETTERS*
  Lee, H., Furukawa, N., Ricco, A. J., Pop, E., Cui, Y., Nishi, Y.
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• **High-Performance p-n Junction Transition Metal Dichalcogenide Photovoltaic Cells Enabled by MoOx Doping and Passivation.** *Nano letters*
  Nassiri Nazif, K., Kumar, A., Hong, J., Lee, N., Islam, R., McClellan, C. J., Karni, O., van de Groep, J., Heinz, T. F., Pop, E., Brongersma, M. L., Saraswat, K. C.
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• **High Current Density in Monolayer MoS2 Doped by AlOx.** *ACS nano*
  McClellan, C. J., Yalon, E., Smithe, K. K., Suryavanshi, S. V., Pop, E.
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• **Dynamic Hybrid Metasurfaces.** *Nano letters*
  Abdollahramezani, S. n., Hemmatyar, O. n., Taghinejad, M. n., Taghinejad, H. n., Kiarashinejad, Y. n., Zandehshahvar, M. n., Fan, T. n., Deshmukh, S. n., Eftekhar, A. A., Cai, W. n., Pop, E. n., El-Sayed, M. A., Adibi, et al
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• **Advanced Data Encryption using 2D Materials.** *Advanced materials (Deerfield Beach, Fla.)*
  Wen, C., Li, X., Zanotti, T., Puglisi, F. M., Shi, Y., Saiz, F., Antidormi, A., Roche, S., Zheng, W., Liang, X., Hu, J., Duhm, S., Roldan, et al
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• **Engineering Thermal Transport across Layered Graphene-MoS2 Superlattices.** *ACS nano*
  Sood, A., Sievers, C., Shin, Y. C., Chen, V., Chen, S., Smithe, K. K., Chatterjee, S., Donadio, D., Goodson, K. E., Pop, E.
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• **Diamond Integration on GaN for Channel Temperature Reduction**
  Malakoutian, M., Xu, R., Ren, C., Pasayat, S., Sayed, I., Pop, E., Chowdhury, S., IEEE
  IEEE.2021: 70-74
• **Sub-200 Omega.μm Alloyed Contacts to Synthetic Monolayer MoS2**
  Kumar, A., Schauble, K., Neilson, K. M., Tang, A., Ramesh, P., Wong, H., Pop, E., Saraswat, K., IEEE
  IEEE.2021

• **Ultralow-switching current density multilevel phase-change memory on a flexible substrate.** *Science (New York, N.Y.)*
  Khan, A. I., Daus, A., Islam, R., Neilson, K. M., Lee, H. R., Wong, H. P., Pop, E.
  2021; 373 (6560): 1243-1247

• **Uncovering Thermal and Electrical Properties of Sb2Te3/GeTe Superlattice Films.** *Nano letters*
  Kwon, H., Khan, A. I., Perez, C., Asheghi, M., Pop, E., Goodson, K. E.
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• **Reduced thermal conductivity of supported and encased monolayer and bilayer MoS2** *2D MATERIALS*
  Gabourie, A. J., Suryavanshi, S., Farimani, A., Pop, E.
  2021; 8 (1)

• **Tuning electrical and interfacial thermal properties of bilayer MoS2 via electrochemical intercalation.** *Nanotechnology*
  Xiong, F. n., Yalon, E. n., McClellan, C. n., Zhang, J. n., Aslan, O. B., Sood, A. n., Sun, J. n., Andolina, C. M., Al-Saidi, W. A., Goodson, K. E., Heinz, T. n., Cui, Y. n., Pop, et al
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• **Two-Fold Reduction of Switching Current Density in Phase Change Memory Using Bi2Te3 Thermoelectric Interfacial Layer** *IEEE ELECTRON DEVICE LETTERS*
  Khan, A., Kwon, H., Islam, R., Perez, C., Chen, M. E., Asheghi, M., Goodson, K. E., Wong, H., Pop, E.
  2020; 41 (11): 1657–60

• **Ultrahigh Doping of Graphene Using Flame-Deposited MoO3** *IEEE ELECTRON DEVICE LETTERS*
  Vaziri, S., Chen, V., Cai, L., Jiang, Y., Chen, M. E., Grady, R. W., Zheng, X., Pop, E.
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• **Visualizing Energy Transfer at Buried Interfaces in Layered Materials Using Picosecond X-Rays** *ADVANCED FUNCTIONAL MATERIALS*
  Nyby, C., Sood, A., Zalden, P., Gabourie, A. J., Muscher, P., Rhodes, D., Mannebach, E., Corbett, J., Mehta, A., Pop, E., Heinz, T. F., Lindenberg, A. M.
  2020

• **Nonvolatile Electrically Reconfigurable Integrated Photonic Switch Enabled by a Silicon PIN Diode Heater.** *Advanced materials (Deerfield Beach, Fla.)*
  Zheng, J., Fang, Z., Wu, C., Zhu, S., Xu, P., Doylend, J. K., Deshmukh, S., Pop, E., Dunham, S., Li, M., Majumdar, A.
  2020: e2001218

• **VO2 Switch for Electrostatic Discharge Protection** *IEEE ELECTRON DEVICE LETTERS*
  Bohaichuk, S. M., Pelella, M. M., Sun, Y., Zhang, Z., Ramanathan, S., Pop, E.
  2020; 41 (2): 292–95

• **Stacking Independence and Resonant Interlayer Excitation of Monolayer WSe2/MoSe2 Heterostructures for Photocatalytic Energy Conversion** *ACS APPLIED NANO MATERIALS*
  Chen, J., Bailey, C., Cui, D., Wang, Y., Wang, B., Shi, H., Cai, Z., Pop, E., Zhou, C., Cronin, S. B.
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• **Monolithic mtesla-level magnetic induction by self-rolled-up membrane technology.** *Science advances*
  Huang, W., Yang, Z., Kraman, M. D., Wang, Q., Ou, Z., Rojo, M. M., Yalamarty, A. S., Chen, V., Lian, F., Ni, J. H., Liu, S., Yu, H., Sang, et al
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• **Improved Current Density and Contact Resistance in Bilayer MoSe2 Field Effect Transistors by A1O x Capping.** *ACS applied materials & interfaces*
  Somvanshi, D. n., Ber, E. n., Bailey, C. S., Pop, E. n., Yalon, E. n.
  2020; 12 (32): 36355–61

• **Large temperature coefficient of resistance in atomically thin two-dimensional semiconductors** *Applied Physics Letters*
  Khan, A., Khakhaz, P., Brenner, K. A., Smihe, K., Mieczko, M. J., Essen, D., Pop, E.
  2020; 116 (20)

* **Flexible Low-Power Superlattice-Like Phase Change Memory**
• Ultra-scaled MoS2 transistors and circuits fabricated without nanolithography. *2D MATERIALS*
Patel, K., Grady, R. W., Smithe, K. H., Pop, E., Sordan, R.
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• Nonvolatile Electrically Reconfigurable Integrated Photonic Switches Using Phase-Change Materials
Zheng, J., Fang, Z., Wu, C., Zhu, S., Xu, P., Doylend, J. K., Deshmukh, S., Pop, E., Dunham, S., Li, M., Majumdar, A., IEEE
IEEE.2020

• Highly confined plasmons in individual single-walled carbon nanotube nanoantennas
Yu, S., Roberts, J., Lin, Q., Bohaichuk, S., Luo, Y., Choi, Y., Ho, P., Lee, K., Falk, A. L., Wilson, W. L., Pop, E., Wong, H., Fan, et al
IEEE.2020

• Phase Change Material Integrated Silicon Photonics: GST and Beyond
Fang, Z., Zheng, J., Xu, P., Deshmukh, S., Pop, E., Majumdar, A., Jiang, S., Digonnet, M. J.
SPIE-INT SOC OPTICAL ENGINEERING.2020

• Uncovering the Effects of Metal Contacts on Monolayer MoS2. *ACS nano*
Schauble, K. n., Zakhidov, D. n., Yalon, E. n., Deshmukh, S. n., Grady, R. W., Cooley, K. A., McClellan, C. J., Vaziri, S. n., Passarello, D. n., Mohney, S. E., Toney, M. F., Sood, A. K., Salleo, et al
2020

• Localized Heating and Switching in MoTe2-Based Resistive Memory Devices. *Nano letters*
Datye, I. M., Rojo, M. M., Yalon, E. n., Deshmukh, S. n., Mleczko, M. J., Pop, E. n.
2020

• Thermal conductivity of crystalline AlN and the influence of atomic-scale defects *JOURNAL OF APPLIED PHYSICS*
Xu, R., Rojo, M., Islam, S. M., Sood, A., Vareskic, B., Katre, A., Mingo, N., Goodson, K. E., Xing, H., Jena, D., Pop, E.
2019; 126 (18)

• Temperature-Dependent Contact Resistance to Nonvolatile Memory Materials *IEEE TRANSACTIONS ON ELECTRON DEVICES*
Deshmukh, S., Yalon, E., Lian, F., Schauble, K. E., Xiong, F., Karpov, I. V., Pop, E.
2019; 66 (9): 3816–21

• Layer-Dependent Interfacial Transport and Optoelectrical Properties of MoS2 on Ultraflat Metals *ACS APPLIED MATERIALS & INTERFACES*
Lee, H., Deshmukh, S., Wen, J., Costa, V. Z., Schader, J. S., Sanchez, M., Ichimura, A. S., Pop, E., Wang, B., Newaz, A. M.
2019; 11 (34): 31543–50

• Localized Triggering of the Insulator-Metal Transition in VO2 Using a Single Carbon Nanotube. *ACS nano*
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2019

• Thermal boundary conductance of two-dimensional MoS2 interfaces *JOURNAL OF APPLIED PHYSICS*
Suryavanshi, S., Gabourie, A. J., Farimani, A., Pop, E.
2019; 126 (5)

• Ultrahigh thermal isolation across heterogeneously layered two-dimensional materials. *Science advances*
Vaziri, S., Yalon, E., Munoz Rojo, M., Suryavanshi, S. V., Zhang, H., McClellan, C. J., Bailey, C. S., Smithe, K. K., Gabourie, A. J., Chen, V., Deshmukh, S., Bendersky, L., Davydov, et al
2019; 5 (8): eaax1325

• Strain- and Strain-Rate-Invariant Conductance in a Stretchable and Compressible 3D Conducting Polymer Foam *MATTER*
Chen, G., Rastak, R., Wang, Y., Yan, H., Feig, V., Liu, Y., Jiang, Y., Chen, S., Lian, F., Molina-Lopez, F., Jin, L., Cui, K., Chung, et al
2019; 1 (1): 205–18

• Significant Phonon Drag Enables High Power Factor in the AlGaN/GaN Two-Dimensional Electron Gas. *Nano letters*
Yalamarthy, A. S., Munoz Rojo, M., Bruefach, A., Boone, D., Dowling, K. M., Satterthwaite, P. F., Goldhaber-Gordon, D., Pop, E., Senesky, D. G.
2019
• Understanding the switching mechanism of interfacial phase change memory *JOURNAL OF APPLIED PHYSICS*
  Okabe, K. L., Sood, A., Yalon, E., Neumann, C. M., Asheghi, M., Pop, E., Goodson, K. E., Wong, H.
  2019; 125 (18)

• Quasi-Ballistic Thermal Transport Across MoS2 Thin Films *NANO LETTERS*
  Sood, A., Xiong, F., Chen, S., Cheaito, R., Lian, F., Asheghi, M., Cui, Y., Donadio, D., Goodson, K. E., Pop, E.
  2019; 19 (4): 2434–42

• Strongly tunable anisotropic thermal transport in MoS2 by strain and lithium intercalation: first-principles calculations *2D MATERIALS*
  Chen, S., Sood, A., Pop, E., Goodson, K. E., Donadio, D.
  2019; 6 (2)

• Quasi-Ballistic Thermal Transport Across MoS2 Thin Films, *Nano letters*
  Sood, A., Xiong, F., Chen, S., Cheaito, R., Lian, F., Asheghi, M., Cui, Y., Donadio, D., Goodson, K. E., Pop, E.
  2019

• Thermal transport in layer-by-layer assembled polycrystalline graphene films *NPJ 2D MATERIALS AND APPLICATIONS*
  Estrada, D., Li, Z., Choi, G., Dunham, S. N., Serov, A., Lee, J., Meng, Y., Lian, F., Wang, N. C., Perez, A., Haasch, R. T., Zuo, J., King, et al
  2019; 3

• Ternary content-addressable memory with MoS2 transistors for massively parallel data search *NATURE ELECTRONICS*
  Yang, R., Li, H., Smithe, K. H., Kim, T. R., Okabe, K., Pop, E., Fan, J. A., Wong, H.
  2019; 2 (3): 108–14

• Plasmon-Resonant Enhancement of Photocatalysis on Monolayer WSe2 *ACS PHOTONICS*
  Chen, J., Bailey, C. S., Hong, Y., Wang, L., Cai, Z., Shen, L., Hou, B., Wang, Y., Shi, H., Sambur, J., Ren, W., Pop, E., Cronin, et al
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• Energy-Efficient Indirectly Heated Phase Change RF Switch *IEEE ELECTRON DEVICE LETTERS*
  Yalon, E., Datye, I. M., Moon, J., Son, K., Lee, K., Pop, E.
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• Engineering thermal and electrical interface properties of phase change memory with monolayer MoS2 *APPLIED PHYSICS LETTERS*
  Neumann, C. M., Okabe, K. L., Yalon, E., Grady, R. W., Wong, H., Pop, E.
  2019; 114 (8)

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  Xu, K., Gabourie, A. J., Hashemi, A., Fan, Z., Wei, N., Farimani, A., Komsa, H., Krasheninnikov, A., Pop, E., Ala-Nissila, T.
  2019; 99 (5)

• Spatial Separation of Carrier Spin by the Valley Hall Effect in Monolayer WSe2 Transistors. *Nano letters*
  Barre, E., Incorvia, J. A., Kim, S. H., McClellan, C. J., Pop, E., Wong, H. P., Heinz, T. F.
  2019

• 3D Heterogeneous Integration with 2D Materials
  McClellan, C., Bailey, C., Datye, I., Gabourie, A., Grady, R., Schauble, K., Vaziri, S., Pop, E., IEEE
  IEEE.2019: 89–90

• Fast Spiking of a Mott VO2-Carbon Nanotube Composite Device. *Nano letters*
  Bohaichuk, S. M., Kumar, S. n., Pitner, G. n., McClellan, C. J., Jeong, J. n., Samant, M. G., Wong, H. P., Parkin, S. S., Williams, R. S., Pop, E. n.
  2019

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  Mleczko, M. J., Yu, A. C., Smyth, C. M., Chen, V. n., Shin, Y. C., Chatterjee, S. n., Tsai, Y. C., Nishi, Y. n., Wallace, R. M., Pop, E. n.
  2019

• Publisher Correction: An electrochemical thermal transistor. *Nature communications*
  Sood, A. n., Xiong, F. n., Chen, S. n., Wang, H. n., Selfi, D. n., Zhang, J. n., McClellan, C. J., Sun, J. n., Donadio, D. n., Cui, Y. n., Pop, E. n., Goodson, K. E.
  2019; 10 (1): 4465
• Reconfigurable Infrared Spectral Imaging with Robust Phase Change Materials
Moon, J., Seo, H., Son, K., Yalon, E., Lee, K., Flores, E., Candia, G., Pop, E., George, T., Islam, M. S.
SPIE-INT SOC OPTICAL ENGINEERING.2019

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Krayev, A. n., Bailey, C. S., Jo, K. n., Wang, S. n., Singh, A. n., Darlington, T. n., Liu, G. Y., Gradenek, S. n., Schuck, P. J., Pop, E. n., Jariwala, D. n.
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