


Stanford



Eric Pop

Professor of Electrical Engineering and, by courtesy, of Materials Science and Engineering

 Curriculum Vitae available Online

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. From 2007-13 he was on the faculty of Electrical & Computer Engineering at University of Illinois Urbana-Champaign (UIUC). His research includes energy conversion systems, nanomaterials, and nanoelectronics. He received his Ph.D. in EE from Stanford (2005) and three degrees from MIT (MEng and BS in EE, BS in Physics). He was a postdoc at Stanford and worked at Intel before joining UIUC. In 2018 he was named one of the world's Highly Cited Researchers by Web of Science. His other honors include the Presidential Early Career (PECASE) Award, and Young Investigator Awards from the ONR, NSF, AFOSR and DARPA (2008-2010). He is an IEEE Senior member, a member of APS and MRS, and a past General Chair of the IEEE Device Research Conference (DRC). 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
- Affiliate, Precourt Institute for Energy

ADMINISTRATIVE APPOINTMENTS

- Co-Lead of Heterogeneous Integration Focus Area, SystemX Alliance, (2015- present)

HONORS AND AWARDS

- 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)
- AFOSR Young Investigator Program (YIP) Award, AFOSR (2010)
- CAREER Award, NSF (2010)
- ONR Young Investigator Program (YIP) Award, ONR (2010)

- PECASE (Presidential) Award from the White House, ARO (2010)
- List of Teachers Ranked as Excellent, UIUC (2009)
- DARPA Young Faculty Award (YFA), DARPA (2008)
- Arnold O. Beckman Research Award, UIUC (2007)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Senior Member, IEEE (2011 - present)
- Member, AAAS (2012 - present)
- Member, APS (2011 - present)
- Member, MRS (2007 - present)

PROGRAM AFFILIATIONS

- Stanford SystemX Alliance

PROFESSIONAL EDUCATION

- Ph.D., Stanford University , Electrical Engineering (2005)
- M.Eng., MIT , EECS (1999)
- B.S., MIT , EECS (1999)
- B.S., MIT , Physics (1999)

LINKS

- Pop Lab research web site: <http://poplab.stanford.edu>

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

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)

2017-18

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

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Elyse Barre, Minda Deng, Marc Jaikissoon, Jung-Soo Ko, Aravindh Kumar, Heungdong Kwon, Koosha Nassiri Nazif, Pranav Ramesh, John Roberts, Maryann Tung, Yecun Wu, Dante Zakhidov, Xin Zheng

Orals Chair

Theo Gao

Postdoctoral Faculty Sponsor

Alwin Daus

Doctoral Dissertation Advisor (AC)

Connor Bailey, Michelle Chen, Victoria Chen, Alex Gabourie, Ryan Grady, Mahnaz Islam, Asir Intisar Khan, Cagil Koroglu, Crystal Nattoo, Katie Neilson, Kirstin Schauble, Sumaiya Wahid, Maritha Wang

Master's Program Advisor

Maxwell Fite

Doctoral (Program)

Connor Bailey, Elyse Barre, Ryan Grady, Fei Huang, Cassandra Huff, Aravindh Kumar, Katie Neilson, Robert Radway, Sumaiya Wahid, Yecun Wu, Jerry Yang, Sofie de Olazarra

Publications

PUBLICATIONS

- **Spectral decomposition of thermal conductivity: Comparing velocity decomposition methods in homogeneous molecular dynamics simulations** *PHYSICAL REVIEW B*
Gabourie, A. J., Fan, Z., Ala-Nissila, T., Pop, E.
2021; 103 (20)
- **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.
2021
- **High-Performance p-n Junction Transition Metal Dichalcogenide Photovoltaic Cells Enabled by MoO_x 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.
2021
- **High Current Density in Monolayer MoS₂ Doped by AlO_x.** *ACS nano*
McClellan, C. J., Yalon, E., Smithe, K. K., Suryavanshi, S. V., Pop, E.
2021

- **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., Eftekhari, A. A., Cai, W. n., Pop, E. n., El-Sayed, M. A., Adibi, et al
2021
- **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
2021: e2100185
- **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
2021
- **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.
2020; 41 (10): 1592–95
- **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.
2020; 3 (2): 1175–81
- **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., Yalamathy, A. S., Chen, V., Lian, F., Ni, J. H., Liu, S., Yu, H., Sang, et al
2020; 6 (3): eaay4508
- **Improved Current Density and Contact Resistance in Bilayer MoSe₂ Field Effect Transistors by AlO_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., Khakbaz, P., Brenner, K. A., Smithe, K., Mleczko, M. J., Esseni, D., Pop, E.
2020; 116 (20)
- **Flexible Low-Power Superlattice-Like Phase Change Memory**
Khan, A., Daus, A., Pop, E., IEEE
IEEE.2020

- **Ultra-scaled MoS₂ transistors and circuits fabricated without nanolithography** *2D MATERIALS*
Patel, K., Grady, R. W., Smithe, K. H., Pop, E., Sordan, R.
2020; 7 (1)
- **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., Dignonnet, 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., Mohny, 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., Schuder, 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*
Bohaichuk, S. M., Munoz Rojo, M., Pitner, G., McClellan, C. J., Lian, F., Li, J., Jeong, J., Samant, M. G., Parkin, S. S., Wong, H. P., Pop, E.
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 AlGa_N/Ga_N 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., Ashoghi, 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
2019; 6 (3): 787–92
- **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.
2019; 40 (3): 455–58
- **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)
- **Thermal transport in MoS₂ from molecular dynamics using different empirical potentials** *PHYSICAL REVIEW B*
Xu, K., Gabourie, A. J., Hashemi, A., Fan, Z., Wei, N., Farimani, A., Komsa, H., Krashennnikov, 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
- **Contact Engineering High-Performance n-Type MoTe₂ Transistors.** *Nano letters*
Mleczo, 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., Selli, 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

- **Dry Transfer of van der Waals Crystals to Noble Metal Surfaces To Enable Characterization of Buried Interfaces.** *ACS applied materials & interfaces*
Krayev, A. n., Bailey, C. S., Jo, K. n., Wang, S. n., Singh, A. n., Darlington, T. n., Liu, G. Y., Gradecak, S. n., Schuck, P. J., Pop, E. n., Jariwala, D. n.
2019
- **Reduction of hysteresis in MoS2 transistors using pulsed voltage measurements** *2D MATERIALS*
Datye, I. M., Gabourie, A. J., English, C. D., Smithe, K. H., McClellan, C. J., Wang, N. C., Pop, E.
2019; 6 (1)
- **Thermal transport across graphene step junctions** *2D MATERIALS*
Rojo, M., Li, Z., Sievers, C., Bornstein, A. C., Yalon, E., Deshmukh, S., Vaziri, S., Bae, M., Xiong, F., Donadio, D., Pop, E.
2019; 6 (1)
- **Recommended Methods to Study Resistive Switching Devices** *ADVANCED ELECTRONIC MATERIALS*
Lanza, M., Wong, H., Pop, E., Ielmini, D., Strukov, D., Regan, B. C., Larcher, L., Villena, M. A., Yang, J., Goux, L., Belmonte, A., Yang, Y., Puglisi, et al
2019; 5 (1)
- **Nanoelectronics and Heterogeneous Integration with 2D Materials**
Pop, E., IEEE
IEEE.2019
- **Process-induced anomalous current transport in graphene/InAlN/GaN heterostructured diodes**
Satterthwaite, P. F., Yalamarthy, A., Vaziri, S., Rojo, M., Pop, E., Senesky, D. G., IEEE
IEEE.2019
- **An electrochemical thermal transistor** *NATURE COMMUNICATIONS*
Sood, A., Xiong, F., Chen, S., Wang, H., Selli, D., Zhang, J., McClellan, C. J., Sun, J., Donadio, D., Cui, Y., Pop, E., Goodson, K. E.
2018; 9
- **An electrochemical thermal transistor.** *Nature communications*
Sood, A., Xiong, F., Chen, S., Wang, H., Selli, D., Zhang, J., McClellan, C. J., Sun, J., Donadio, D., Cui, Y., Pop, E., Goodson, K. E.
2018; 9 (1): 4510
- **Research Update: Recent progress on 2D materials beyond graphene: From ripples, defects, intercalation, and valley dynamics to straintronics and power dissipation** *APL MATERIALS*
Lin, Z., Lei, Y., Subramanian, S., Briggs, N., Wang, Y., Lo, C., Yalon, E., Lloyd, D., Wu, S., Koski, K., Clark, R., Das, S., Wallace, et al
2018; 6 (8)
- **Electronic synapses made of layered two-dimensional materials** *NATURE ELECTRONICS*
Shi, Y., Liang, X., Yuan, B., Chen, V., Li, H., Hui, F., Yu, Z., Yuan, F., Pop, E., Wong, H., Lanza, M.
2018; 1 (8): 458–65
- **High-Field Transport and Velocity Saturation in Synthetic Monolayer MoS2** *NANO LETTERS*
Smithe, K. H., English, C. D., Suryavanshi, S. V., Pop, E.
2018; 18 (7): 4516–22
- **GST-on-silicon hybrid nanophotonic integrated circuits: a non-volatile quasi-continuously reprogrammable platform** *OPTICAL MATERIALS EXPRESS*
Zheng, J., Khanolkar, A., Xu, P., Deshmukh, S., Myers, J., Frantz, J., Pop, E., Hendrickson, J., Doylend, J., Boechler, N., Majumdar, A.
2018; 8 (6): 1551–61
- **Tuning Electrical and Thermal Transport in AlGaN/GaN Heterostructures via Buffer Layer Engineering** *ADVANCED FUNCTIONAL MATERIALS*
Yalamarthy, A., So, H., Rojo, M., Suria, A. J., Xu, X., Pop, E., Senesky, D. G.
2018; 28 (22)
- **Unipolar n-Type Black Phosphorus Transistors with Low Work Function Contacts** *NANO LETTERS*
Wang, C., Incorvia, J. C., McClellan, C. J., Yu, A. C., Mleczo, M. J., Pop, E., Wong, H.
2018; 18 (5): 2822–27
- **Probing the Optical Properties and Strain-Tuning of Ultrathin Mo1-&ITx&ITW&ITx&ITTe2** *NANO LETTERS*
Aslan, O., Datye, I. M., Mleczo, M. J., Cheung, K., Krylyuk, S., Bruma, A., Kalish, I., Davydov, A. V., Pop, E., Heinz, T. F.

2018; 18 (4): 2485–91

- **Ultra-low contact resistance in graphene devices at the Dirac point** *2D MATERIALS*
Anzi, L., Mansouri, A., Pedrinazzi, P., Guerriero, E., Fiocco, M., Pesquera, A., Centeno, A., Zurutuza, A., Behnam, A., Carrion, E. A., Pop, E., Sordan, R.
2018; 5 (2)
- **Flexural resonance mechanism of thermal transport across graphene-SiO₂ interfaces** *JOURNAL OF APPLIED PHYSICS*
Ong, Z., Qiu, B., Xu, S., Ruan, X., Pop, E.
2018; 123 (11)
- **Carbon nanomaterials for non-volatile memories** *NATURE REVIEWS MATERIALS*
Ahn, E. C., Wong, H., Pop, E.
2018; 3 (3)
- **Microstructural origin of resistance-strain hysteresis in carbon nanotube thin film conductors** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Jin, L., Chortos, A., Lian, F., Pop, E., Linder, C., Bao, Z., Cai, W.
2018; 115 (9): 1986–91
- **Detection of Methylation on dsDNA at Single-Molecule Level using Solid State Nanopores**
Bello, J., Kim, Y., Banerjee, S., Smithe, K., Estrada, D., Myong, S., Nardulli, A., Pop, E., Bashir, R., Shim, J.
CELL PRESS.2018: 216A
- **Theoretical potential for low energy consumption phase change memory utilizing electrostatically-induced structural phase transitions in 2D materials** *NPJ COMPUTATIONAL MATERIALS*
Rehn, D. A., Li, Y., Pop, E., Reed, E. J.
2018; 4
- **Low Power Nanoscale Switching of VO₂ using Carbon Nanotube Heaters**
Bohaichuk, S., Rojo, M., Pitner, G., McClellan, C., Lian, F., Li, J., Jeong, J., Samant, M., Parkin, S., Wong, H., Pop, E., IEEE
IEEE.2018
- **3D Monolithic Stacked 1T1R cells using Monolayer MoS₂ FET and hBN RRAM Fabricated at Low (150 degrees C) Temperature**
Wang, C., McClellan, C., Shi, Y., Zheng, X., Chen, V., Lanza, M., Pop, E., Wong, H., IEEE
IEEE.2018
- **The Heat Conduction Renaissance**
Sood, A., Pop, E., Asheghi, M., Goodson, K. E., IEEE
IEEE.2018: 1396–1402
- **Investigation of Monolayer MX₂ as Sub-Nanometer Copper Diffusion Barriers**
Smithe, K. H., Zhu, Z., Bailey, C. S., Pop, E., Yoon, A., IEEE
IEEE.2018
- **Localized Heating in MoTe₂-Based Resistive Memory Devices**
Datye, I. M., Rojo, M., Yalon, E., Mleczko, M. J., Pop, E., IEEE
IEEE.2018
- **Probing Self-Heating in RRAM Devices by Sub-100 nm Spatially Resolved Thermometry**
Deshmukh, S., Rojo, M., Yalon, E., Vaziri, S., Pop, E., IEEE
IEEE.2018
- **Sub-Thermionic Steep Switching in Hole-Doped WSe₂ Transistors**
McClellan, C. J., Yalon, E., Cai, L., Suryavanshi, S., Zheng, X., Pop, E., IEEE
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